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ABSTRACT

This report examines the technology gap in low-income communities, assesses the barriers that are slowing the spread of new technologies to the underserved, and describes some of the most promising efforts to produce a more equitable distribution. Chapter 1 of the report discusses what is known about the extent of the technology gap and its implications. The technology gap takes a toll on individuals, communities, and society at large, with disadvantages that stretch beyond labor market access to participation in the fabric of society. Chapter 2 examines the barriers that complicate efforts to close the gap. These include societal priorities, ambivalence about technology, and lack of political clout. Chapter 3 describes policy issues that affect access to new communications technologies. These center on universal service, federal and state programs and policies, antipoverty initiatives, and community-based initiatives. In chapter 4, a wide range of community-based efforts are described to illustrate approaches to achieving a more equitable distribution of the benefits of the digital age. Chapter 5 lists 108 additional resources for those interested in pursuing the matter further. (Contains four graphs.) (SLD)

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LOSING GROUND BIT BY BIT:

Low-Income Communities in the Information Age

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Losing Ground Bit by Bit is published by the Benton Foundation in association with the National Urban League, who share a commitment to bringing the benefits of the digital age to all Americans.

Benton Foundation

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The Benton Foundation works to realize the social benefits made possible by the public interest use of communications. Bridging the worlds of philanthropy, public policy, and community action, Benton seeks to shape the emerging communications environment for solving social problems. Through demonstration projects, media production and publishing, research, conferences, and grantmaking, Benton probes the relationships between the public, corporate, and nonprofit sectors to address the critical questions for democracy in the Information Age.

The Benton Foundation's Communications Policy and Practice program promotes public interest values and noncommercial services for the evolving Information Infrastructure through research, policy analysis, print and online publishing, and outreach to nonprofits and foundations. Its website provides current information on communications policy and highlights innovative practices of technology by nonprofit organizations.

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The National Urban League is the premiere social service and civil rights organization in America. The League is a nonpartisan, community-based organization headquartered in New York City, with 115 affiliates around the country. The League's Technology Programs and Policy department works with industry, government, and other community-based organizations to bring the benefits of information and communications technologies to underserved communities.

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LOSING GROUND BIT BY BIT:
Low-Income Communities in the Information Age

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Losing Ground

Bit by Bit:

Low-Income Communities in the Information Age

When Tony Riddle, executive director of Manhattan Neighborhood Network, wants to emphasize the importance of information to social welfare, he tells the story of "Juneteenth."

June 19 commemorates the day in 1865 when slaves in Texas first learned that Abraham Lincoln had issued the Emancipation Proclamation. Lincoln actually signed the proclamation much earlier—in 1863. But the Texas slaves, deprived of this information, had to wait two and a half more years before finally achieving freedom.

Today, it's hard to imagine anybody being denied information so vital to his or her well-being for so long. Yet in ways more subtle but nevertheless insidious, some people lack access to the emerging information resources of the digital age. By 1998, we may assume that every American has at least heard of, if not used, the global computer network called the Internet. But while kids in wealthier households may now take access to technology—at home, at school, or at the local library—for granted, the lack of access to up-to-date computers in low-income communities and to affordable Internet service in rural areas leaves many people cut off from good jobs and the chance to participate in the affairs of the broader society.

Indeed, even as digital technologies are bringing an exciting array of new opportunities to many Americans, they actually are *aggravating* the poverty and isolation that plague some rural areas and inner cities. Advances in telecommunications are speeding the exodus of good jobs from urban areas to the suburbs, leaving inner cities and rural areas more isolated than ever from the kinds of jobs, educational opportunities, quality health-care services, and technological tools that they need to be able to contribute to the overall economy.

This technology gap has ominous implications not just for the low-income communities that are directly affected, but for the entire society. "We are witnessing the fracturing of the democratic institutions that hold us together," warns Armando Valdez, chair of the California Telecommunications Policy Forum, a group of leaders from ethnic communities who examine the impact of telecommunications policies. "The possibility of an information underclass is growing."

This need not be the shape of our future, however. With some effort, information technologies could help us address problems of chronic poverty. While they clearly are no substitute for other anti-poverty efforts, they could be used to facilitate the kind of networking and exchange of information vital to community building. They could enable social service agencies to operate much more efficiently and reach a broader public. They could empower individuals and groups who have been excluded from public discourse by allowing them to reach new and wider audiences. New technologies could provide data that communities can use to understand and attack problems relating to housing, crime, health, and other concerns.

This report, the latest in Benton's "What's Going On" series exploring public interest issues in the Information Age, examines the technology gap in low-income communities, assesses what barriers are slowing the spread of new technologies to the underserved, and describes some of the most promising efforts to produce a more equitable distribution. It reflects our conviction that the design of the communications system through which we will talk to one another, learn from one another, and participate in political and economic life together is too important to be left to the free market alone. Public interest advocates—including representatives of the poor—must play an active role in both the policy arena and the marketplace to ensure that the emerging networks meet the basic economic, social, political, and cultural needs of everyone, regardless of their ability to pay or where they live.

We all have a stake in achieving this inclusive future. As B. Keith Fulton, director for technology programs and policy for the National Urban League, states, society is an organism and communications networks are its nervous system. Just as the whole body suffers if some parts of it aren't able to communicate with the rest by nerves, society suffers if some individuals and communities are digitally disconnected. "There is value," Fulton argues, "in every community--in the barrio and the ghetto, in Appalachia, in Chinatown, in uptown and downtown, and eastside and westside."

The report begins by discussing what we currently know about the extent of the technology gap and its implications. In Part II, we examine barriers that complicate efforts to close the gap. Part III describes policy issues that affect access to new communications technologies. In Part IV, we examine a wide range of community-based efforts that we believe illustrate approaches that offer the best hope of bringing about a more equitable distribution of the benefits of the digital age. Finally, Part V lists some additional resources for those interested in pursuing these issues further.

Refining the Technology Gap

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1 Defining the Technology Gap

In an October 8, 1996, article describing one of California's technology corridors, the *Wall Street Journal* captured some of the enthusiasm many people feel for the revolution arising from the marriage of computers and communications networks. "Silicon Valley," it said, "is in the midst of an epic boom, opulent even for this glittering edge of America."

But such riches haven't reached many low-income communities—even ones like East Palo Alto, which is right in the middle of Silicon Valley's technological abundance. "Anywhere else in Silicon Valley, your parents use computers, there is a shop down the street to sell you a computer, another to fix your computer, another to give you computer classes, (and) there are Kinko's everywhere," notes Bart Decrem, director of a California youth technology initiative called Plugged In. "In East Palo Alto, there's none of that."

The contrast between affluent and low-income communities may be particularly sharp in places like Silicon Valley, but it exists almost everywhere. The simple fact is that poor communities are entering the Information Age far behind their wealthier neighbors.

"While [middle-class communities] are rapidly approaching the 'next cycle,' the technology of the previous cycle has already bypassed the inner city," says Richard Krieg, executive director of the Institute for Metropolitan Affairs, a public interest organization in Chicago committed to seeking practical answers to problems involving education, health care, and crime. Krieg notes that while families in affluent areas are rapidly acquiring home computers, people in many low-income neighborhoods have little exposure even to earlier generation tools such as laser scanners at supermarkets and bank automatic tellers. "Despite limited empirical study of technology diffusion..., it is clear that computerization, telecommunications, and mass media applications are dramatically underrepresented in distressed urban areas."

As Krieg suggests, the technology gap is not simply a reflection of the choices made by individual households. The deeper problem is that many poor neighborhoods lack the infrastructure available in affluent areas. Groups such as the United Church of Christ that have studied patterns of telecommunications investment have found that, all too often, telephone and cable companies have moved quickly to wire wealthier suburbs with advanced systems, while poor, inner-city neighborhoods aren't upgraded. While public attention is often focused on whether individuals can get a service, the equally important problem is that lack of adequate telecommunications facilities makes an area less attractive for businesses. This can feed a spiral where the lack of investment at the community level leads to fewer economic opportunities for people who live there. As a result, the poverty in the neighborhood makes it a less inviting target for investment, further aggravating the problem.

The same neighborhoods that lack infrastructure are comprised of households that are far less likely to have the tools of the Information Age. In an August 1996 survey of southern Californians, the *Los Angeles Times*

found that just 22 percent of households earning less than $25,000 had access to computers, compared to 69 percent of those with incomes over $50,000. "Poor neighborhoods of the region are just totally cut off from the potential benefits of an economy that integrates such vast scientific skill," says Mike Davis, a Los Angeles historian and teacher of urban studies at the Southern California Institute of Architecture.

More recently, according to a Computer Intelligence 1998 Consumer Technology Survey, 80 percent of families making more than $100,000 have computers. By contrast, of those families making less than $30,000 a year, only 25 percent have computers. A 1998 study led by David Birdsell of Baruch College found significant disparities in the area of education: of people with an undergraduate degree or higher, 53 percent use the Web while only 19 percent of people with a high school education or less are Web users.

While demographic trends are changing quickly, there is some evidence that race and income may interact in troubling ways. A 1998 Vanderbilt University study based on Nielsen data from late 1996 and early 1997 indicates that racial inequities in computer ownership and Internet access jump significantly when household incomes drop below $40,000. In such cases, African Americans were less than half as likely as whites to own a home computer and about 60 percent as likely to have Internet access.

Similar trends appear in telephone service, a much older technology that many poor Americans still don't have. While all but 6 percent of U.S. households have telephones, 43.5 percent of families who depend entirely on public assistance and 50 percent of female-headed households living at or below the poverty line lack even this basic technology. And African Americans and Latinos lag about 10 percentage points behind their white counterparts in access to telephones even when income is held constant.

Worrisome Trends

There is no easy way to measure the impact of the current inequitable distribution of information technologies, but it clearly is becoming an increasingly important contributor to inequality in America. The Office of Technology Assessment (OTA) described the effect as "the concentration of poverty and the deconcentration of opportunity."

Email, video conferencing, fax machines, and computer networks are making it easier for jobs to migrate from city centers to suburbs and beyond, the OTA explained in a 1995 report. These technologies are enabling industries that once had to be close to customers and related businesses to operate at greater distances. Similarly, they are allowing distributors and financial institutions like banks and insurance companies to consolidate operations and locate "back room" facilities farther from their customers, eliminating many downtown jobs.

At the same time, new technologies have led to sweeping changes in manufacturing processes, making old factories in urban centers obsolete. The OTA estimated that the 28 largest counties in the Northeast and Midwest lost one million jobs in the 1980s. The city of Chicago alone has more than 2,000 unused manufacturing sites, according to Krieg.

As employers take advantage of technological advances to relocate to suburbs, the labor market in many cities has become fractured. Many highly skilled managerial and professional jobs remain downtown because they require a great deal of face-to-face contact and networking. But increasingly, the only work for unskilled people consists of low-paying, service sector jobs. Such jobs offer little hope of advancement, and intermediate jobs that would help less skilled workers climb career ladders are hard to find.

"We are witnessing the wholesale disappearance of work accessible to the urban poor," concludes Milton J. Little, Jr., executive vice president and chief operating officer of the National Urban League. His view was confirmed in 1996 by Harvard sociologist William Julius Wilson in *When Work Disappears: The World of the New Urban Poor.*

But the cities' loss has not been the rural areas' gain. "Without intervention, unemployment, poverty, and out-migration will likely increase, exacerbating the structural problems typical of rural areas," the OTA warned in an earlier report, *Rural America at the Crossroads: Networking for the Future.* "Unlike routine manufacturing industries that migrated to rural areas in search of lower production costs, today's high-technology industries are attracted by a highly skilled workforce and communications networks to other economic markets and information centers. These are precisely what rural areas lack."

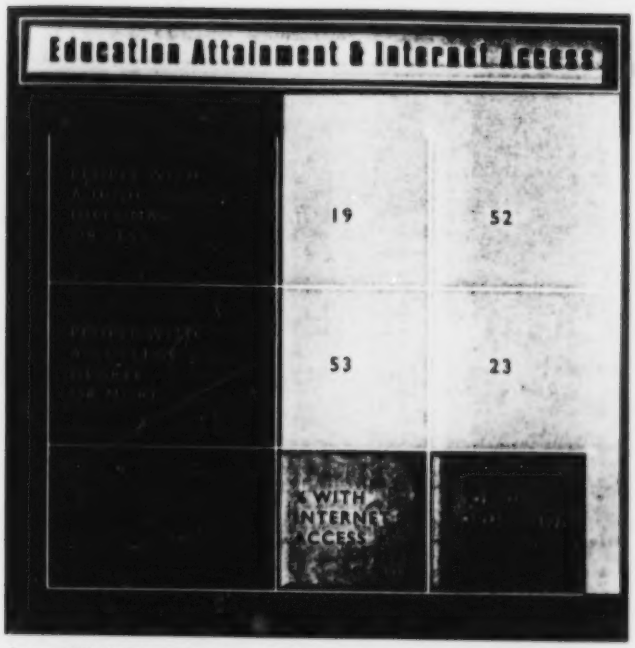
"Poor, rural communities are already isolated," observes Amy Borgstrom, executive director of ACENet, an organization dedicated to using networking technologies to open new markets for citizens in Appalachian Ohio. "There is low access to infrastructures." Borgstrom argues that information technologies could enable isolated communities—rural and inner-city—to compete economically with other regions. "But without infrastructure, training, and access, information technology and these opportunities will pass these communities by," she says.

Who Suffers?

The technology gap is taking a toll on individuals, communities, and society at large.

The cost to individuals is most obvious. By the year 2000, 60 percent of jobs will require skills with technology, according to Larry Irving, Assistant Secretary of Commerce for Communications and Information. Moreover, notes the Office of Management and Budget, 75 percent of all transactions between individuals and the government—including such services as delivery of food stamps, Social Security benefits, and Medicaid information—will take place electronically. People without technology skills or access to electronic communications will be at a considerable disadvantage.

This is already clear in today's job market. The gap between wages for skilled and unskilled workers has been widening for some years as employers increasingly compete for well-trained workers who can use new technologies. Between 1979 and 1995, for instance, real wages dropped 23 percent for people with less than a high school education and 12 percent for those with only high school diplomas, while wages rose 4



Source: "Web Users are Looking More Like Americans," Harris Survey Unit of Baruch College and Louis Harris Associates, April 1998.

percent for college graduates and 12 percent for people with advanced degrees, according to the Economic Policy Institute, a Washington think tank. Economists David Autor and Lawrence Katz of Harvard and Alan Krueger of Princeton found in a March 1997 study that the spread of computer technology may explain as much as half of the increase in relative demand for more skilled workers.

More recently, *The Washington Post* reported that students with limited or no access to computers are falling behind in skills that educators and parents worry will cost them later. These students are less exposed to a diverse range of facts and ideas than their computer-owning classmates, and they are increasingly at a disadvantage when it comes to skills that will be needed in college and in the job market.

People with relatively poor access to computers suffer disadvantages that stretch beyond the labor market. Unless there is intervention, "fewer and fewer Americans will be able to fully participate in our nation's economic, social, civic, and government life," the Department of Housing and Urban Development (HUD) says on its website. HUD has established a "Neighborhood Networks" initiative to assist disadvantaged Americans living in HUD-insured or -assisted housing gain access to information technologies.

"The rich are going to be getting richer in terms of information," says James Katz, a researcher at Bellcore and co-author of a survey on Internet usage. "The information poor will become more impoverished because government bodies, community organizations, and corporations are displacing resources from their ordinary channels of communication onto

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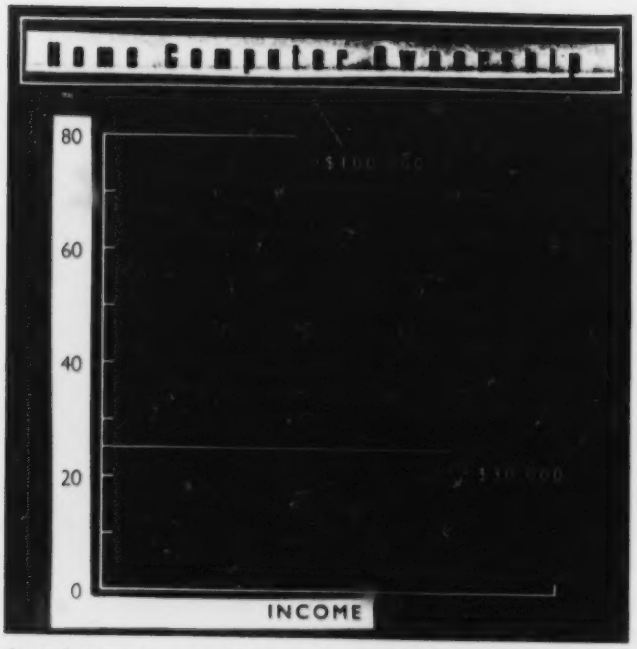

Source: Computer Intelligence, "1998 Consumer Technology Index."

the Internet.... To the extent any demographic group becomes excluded from and underrepresented on the Internet, it will also be excluded from the economic fruits that such participation promises."

The technology gap may also slow efforts by low-income communities to help themselves. A growing number of civic activists believe that modern communications networks are an important tool for fostering civic engagement. According to Harvard political scientist Robert Putnam, civic engagement—whether in PTAs, bowling leagues, or any of the associations people form to address specific issues—can facilitate coordination and communication, foster the emergence of leaders who can help generate collective action, and reduce incentives for people to act solely in their own self-interest. Research in fields as varied as education, urban poverty, unemployment, crime, drug abuse, health, and economic development recognizes that the resulting "social capital" can enable communities to deal more successfully with social problems. Communities without access to communications networks may find it more difficult to sustain the civic engagement that can lead to these improved outcomes.

Communications technologies may be especially important to neighborhood-based organizations, many of which struggle in relative isolation to deal with such daunting problems as abandoned housing, poor street maintenance, crime, substandard health care and education, and environmental threats. Yet the Urban University and Neighborhood Network (UUNN), a coalition of universities and community organizations in Ohio, found in a recent survey that most such organizations have neither Internet access, nor believe that they could afford it. According to the UUNN, organizations without access may be undermining their own

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prospects for survival because the Internet in at least some cases is not only the most efficient resource for information, but also for updates on pending legislation and funding opportunities.

"Those who lack access to the Internet...will lose out in an increasingly competitive environment," the UUNN concluded. "Because so many neighborhood-based organizations are small, geographically isolated, and woefully underfunded, their members don't have efficient access to the information needed to understand all aspects of their neighborhood problems and the paths toward solutions."

This lack of infrastructure strikes some as particularly worrisome because it comes at a time the federal government is forcing individuals and communities to become more self-sufficient. Cuts in spending on social programs and the new, strict work requirements imposed on welfare recipients make it more necessary than ever that low-income people take responsibility for their own well-being, but their task is greatly complicated by the lack of communications tools and other networking opportunities that people in affluent areas take for granted. "It's as if we're asking them to pull themselves up by their boot straps, and we are taking away their boots," says Joey Rodger, president of the Urban Libraries Council.

Katherine Willis, of the Alliance for Community Technology at the University of Michigan, believes that exclusion of certain groups from these communications tools could also have profound implications for our society's ability to function as a democracy. "When democracy functions well, individual perspectives balance each other out," she notes. "But if I can lobby my congressman with email with a click of a button, and those on the other side of an issue don't have such easy access, laws will be made that don't reflect the full population's beliefs."

Can Schools and Libraries Help the Poor Catch Up?

Traditionally, we have looked to schools and libraries to help eliminate disparities in access to information resources. Unfortunately, through no fault of their own, many of these institutions mirror the technology gap rather than mitigate it.

Despite considerable progress, schools in low-income communities have fewer computers and modems than schools serving wealthier districts. According to *Computers and Classrooms: The Status of Technology in U.S. Schools*, a study by the Educational Testing Service (ETS), minority and poor students had significantly less access to computers in their classes than more affluent children. Schools with minority enrollment greater than 90 percent had a student-to-computer ratio of 17 to 1, compared to the national average of 10 to 1. For computers with advanced graphics and interactive video capabilities, the discrepancies were even bigger. While 62 percent of schools in high-income areas had Internet access in 1995, just 31 percent of schools serving low-income populations had access, according to the Department of Education's 1996 report, *Getting America's Students Ready for the Twenty-First Century*. ETS's later study found that the number of schools with Internet access rose markedly in 1996, but the gap

remained: 75 percent of schools in high-income areas and just 55 percent in low-income areas had Internet access. "The kids with the most needs are getting the least access," an ETS researcher told the *Washington Post*.

Insufficient hardware or network connections aren't the only—and may not even be the biggest—problems for schools in poorer communities. Because of inadequate teacher training, these schools may not be using the computers they have in ways that have the greatest long-term benefits for students. All too often, they use computers for rote learning or drill exercises. In wealthy schools, on the other hand, where there generally is more money for curriculum development and teacher training, computers tend to be used more for complex learning activities, analysis, and writing—skills that command higher wages in today's economy.

As Delia Neuman at Maryland College of Information Services put it in a 1990 study that remains one of the few academic analyses of the issue, "economically disadvantaged students, who often use the computer for remediation and basic skills, learn to do what the computer tells them, while more affluent students...learn to tell the computer what to do." (The Benton Foundation explores the educational role of computer networking in its report, *The Learning Connection: Schools in the Information Age*.)

Libraries, meanwhile, are working to reduce inequality in access to new technologies, but they lack resources to do the whole job. According to Richard Kreig, public libraries in the city of Chicago had just one computer for every 20,000 residents they served in 1995, while libraries in the city's suburbs had one for every 13,000 residents. Krieg asserts that the discrepancy would be even greater if figures were available to compare the number of computers available in libraries in low-income sections of Chicago to those at suburban libraries.

Internet access is also spread unevenly among libraries, with the greatest disparity between libraries in urban/suburban and rural areas. While 72.3 percent of all public libraries had some type of Internet connection in the spring of 1997, library systems serving populations of 25,000 and above had a better than 90 percent connectivity rate, according to *The 1997 National Survey of U.S. Public Libraries and the Internet*. Those serving populations of 5,000 or less had a connectivity rate of around 56 percent. Even among libraries that are connected, Internet access for patrons varies widely.

There is a direct link between the wealth of a library's neighborhood and the ability of that library to serve its neighborhood information needs, argues the Urban Libraries Council's Joey Rodger. "Ninety percent of library funding is local," she says. "Where there are many, many poor people, the local library has less capacity to serve them."

Barriers to Closing the Gap

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2 Barriers to Closing the Gap

Lack of resources in low-income communities can't explain the technology gap alone, although that clearly is an important factor. The low priority that society puts on equal access to telecommunications hardware, combined with skepticism among the poor about the benefits technology might bring, also hinder deployment of new information infrastructure in impoverished neighborhoods. Any plan to achieve a more equitable distribution must address these attitudinal barriers in addition to surmounting the considerable financial obstacles.

Societal Priorities

Many Americans view advanced telecommunications tools as technological "gadgets" and don't perceive an overriding public need to ensure their equitable distribution. They consider the new technologies part of what Princeton University Professor Jennifer L. Hochschild calls the "economic domain" rather than the "socializing domain." According to Hochschild's research, Americans expect equality in the socializing domain, which includes goods like education, health care, and basic political rights, but we tolerate much wider differentiation in the economic domain.

Because many people consider information technologies part of the economic realm, proposals to use public funds to establish community access centers often encounter resistance. "Access is still in a consumer mentality," says Peter Miller, director of the Community Technology Centers' Network, a coalition of over 200 programs and agencies that provide training and computer time to people who typically lack access. "It's compared to swimming pools or tennis courts. The whole idea that a community access center is a place where people get empowered—no one's there yet."

In fact, information technologies increasingly are taking on characteristics of goods in the socializing realm. "Email is not like a commodity or a gadget, where we've grown to expect socio-economic stratification," noted Tora Bikson, the co-author of RAND's *Universal Access To E-mail*, in a December 1995 interview. "Rather, it's much more a means for accessing information, communicating, and exchanging ideas (and participating in) voluntary associations, civic organizations, (and) political activity...If people are cut off from the means to participate in these kinds of activities, it really has a negative impact on society as a whole."

Computer networking is so new that its full social role is still being defined. But studies of families who can't afford basic telephone service offer some indication of the importance of telecommunications in people's lives. Jorge Reina Schement, a communications scholar at Penn State University, cites research that low-income families without telephone service face barriers to seeking public assistance, and are dangerously isolated in cases of emergency. In 1987, a Montana court decided that lack of a phone was a real barrier to gaining employment. The court based its decision partly on a study showing that individuals without phones have a harder time scheduling job interviews or communicating with prospective

Source: "Telephone penetration by state," FCC Common Carrier Bureau, January 1998; "Ensuring Telephone Access in the Digital Age," Center for Media Education, February 1998

employers, noted Ellis Jacobs, director of litigation for the Legal Aid Society of Dayton, Ohio.

Similarly, a study conducted by the National Consumer Law Center for the Maine Public Utilities Commission showed that 80 percent of households whose electric service had been cut off had no telephones and that people without a phone were underrepresented in payment plans. This reflects, at least in part, the fact that families who lack phone service have trouble contacting utilities and social service agencies to seek benefits for which they are qualified.

Ambivalence about Technology

Many low-income people themselves are skeptical about the value of digital technologies. That isn't surprising, since poor people have little exposure to the new technologies and their experience with previous technologies may not have been as positive as middle-class policymakers might assume.

"Do people feel that computers are going to be crucial for their future?" asks Jonathan Lange, a community organizer for Baltimore United in Leadership Development (BUILD). "No. People don't have computers. They don't have them in their homes. They don't have them at school. They don't even have phones."

In research commissioned by the Markle Foundation in 1996, Bellcore Labs found that "a disproportionate number of African American and Hispanic respondents reported not being aware of the Internet." Some 58 percent of those who weren't aware had household incomes

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below $25,000. Those figures may understate the problem. "Despite massive amounts of publicity, few people know what the World Wide Web is, how it can be accessed, and what kinds of information can be obtained by its use," Theresa E. Anderson and Alan Melchior wrote in *Assessing Telecommunications Technology as a Tool for Urban Community Building*.

Carol Edwards, director of programs at the National Education Association's National Foundation for the Improvement of Education, blames the technology gap partly on the way computer technology is sold. Cars, furniture, housing, and other big-ticket items often come with financing options, but computers, which are marketed mainly to the middle class, often must be bought all at once. "Look at where you buy computers: in upper-class malls or through mail order," Edwards says. "People in poor communities don't have easy access to these distributors." Nor do many poor people have checking accounts or credit cards, which often are required to get an Internet account, she adds.

While schools and libraries often provide access, training, and support for many who otherwise would not have any entry point to the Internet, these institutions face an uphill struggle to overcome the skepticism of many people in low-income areas. "Poor people—maybe because of illiteracy, maybe because part of being poor means being unconnected to public institutions—may not come to libraries for access," says the Urban Libraries Council's Joey Rodger.

But Bruce Lincoln, manager of community outreach and development at the Institute for Learning Technologies, interprets that ambivalence in another way. "It's understandable that folks are skeptical, but when the principal, the parents, the students, and the teachers are involved in the design and decisionmaking, they quickly overcome their initial ambivalance."

The troubles encountered by schools and libraries illustrate an important point about the dissemination of computer technology. As the Bellcore survey demonstrated, many people—over half of those surveyed—learned about the Internet not through these institutions, but rather at work or through family or friends. Only one in five was introduced to the technology at a university or through some other formal course. Similarly, a 1996 national public opinion survey of library users published by the Benton Foundation in *Buildings, Books, and Bytes* found that a strong plurality would go to "somebody they know" rather than a librarian for help with technology.

This suggests that narrowing the technology gap will be more difficult than simply introducing computers or offering classes. Top-down efforts may prove to be frustratingly slow. Creative ways will have to be found to make computer networking more a part of the social lives of people in low-income neighborhoods.

Lack of Political Clout

Because relatively few people in low-income communities see much value in new technologies, their neighborhoods are less vocal in demanding services from communications providers. Indeed, many lack the basic information needed to exercise political leverage.

Ethel Long-Scott, director of the Women's Economic Agenda Project (WEAP) in Oakland, California, believes that without strong activism, poor communities will be saddled with regional communications plans that don't serve their best interest. WEAP has launched a "women and family center" to provide education and training in the computer and communications technology, to foster development of women- and minority-owned small businesses, and to involve Oakland's grassroots leadership in a program of community revitalization.

In Oakland, there are "scattered efforts" to apply technology, but the community groups sponsoring these efforts aren't strong enough to sustain a comprehensive effort, Long-Scott says. Wealthy areas like Sunnyvale and Cupertino in California are more likely able to make long-term technology plans, while decisionmaking bodies in poor communities continue to be "overwhelmed," she suggests.

In the absence of strong grassroots pressure, telecommunications providers appear unlikely to deploy new technologies to low-income communities voluntarily anytime soon. GTE failed to replace party lines with private lines in rural Hawaii until 1991, when subscriber complaints finally led to a court order requiring the move. More recently, Bell Atlantic, which told New Jersey residents in 1992 that it would connect every home and business with fiber optic cable, so far has only wired corporations and large suburban business areas. The company has announced plans to connect suburban neighborhoods on schedule, but it has not released plans to connect the poor areas of the state's largest cities, including the state's empowerment zones.

Bell Atlantic says it connected the regions with the most demand first and that the whole state will be connected by 2010. But people concerned about the wellbeing of low-income communities aren't satisfied. Concerned that the empowerment zones won't be able to attract needed investment and businesses without new communications technologies, New Jersey's rate payer advocate filed a complaint with the state's board of public utilities. "Bell Atlantic New Jersey has not only inequitably deployed broadband in the past, singling out suburban areas for preferential treatment, but it apparently plans to continue that practice in the future," the advocate, Blossum A. Peretz, told the *New York Times*. In response to these and other assertions, Bell Atlantic has moved aggressively to invest in community-based organizations serving low-income neighborhoods.

To be sure, telecommunications providers face difficult decisions as they build communications networks for the new century. The costs of building capacity that exceeds the reach of a region are considerable. In 1994 and 1995, North Carolina's telephone companies partnered with the state and built the North Carolina Information Highway (NCIH), an advanced telecommunications infrastructure for voice, data, and video transmission. The WEFA Group, an economic consulting firm, estimates that the project will cost $450 million by the end of 1999, and the state auditor's office has estimated that the project will cost $1 billion over the next nine years. It costs as much as $100,000 to equip each new NCIH site, and users face charges of about $3,000 a month, plus $23 an hour

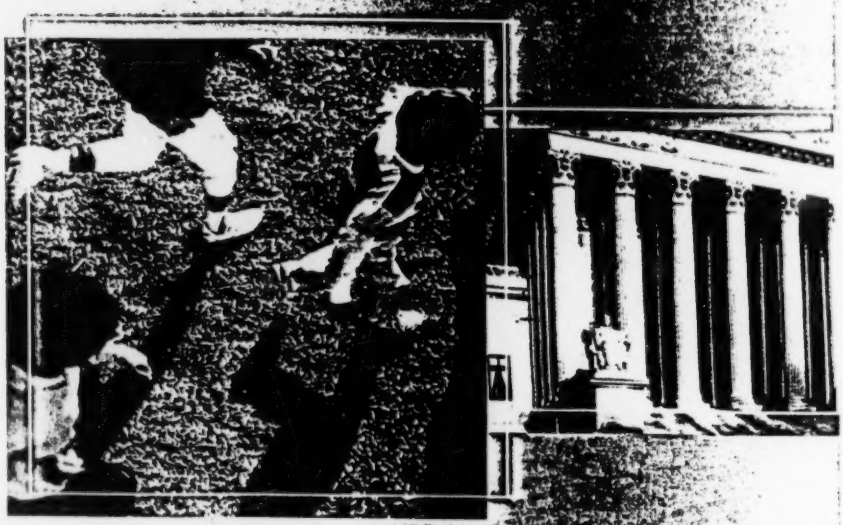
for video usage (after the first 50 hours, which the state subsidizes) and $483 per month for data usage. Most prospective customers can find lower-tech, cheaper alternatives—a strategy encouraged by the fact that users of the system must acquire extra hardware to connect to the Internet. With fewer government and private subscribers using the NCIH than originally expected, projected price reductions based on volume could fail to materialize.

As such examples demonstrate, policymakers and advocates face tough choices as they seek to ensure creation of an affordable communications network for the future that also serves democratic ideals.

14

What's Needed:

The Policy Arena



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What's Needed: The Policy Arena

Government policies will go a long way toward determining whether new information technologies widen or narrow social divisions. To ensure that the digital future brings opportunity for everybody, regardless of income or geography, public interest advocates must play an active role in the continuing debate over telecommunications policy.

Universal Service

A key issue will be whether society's traditional commitment to universal access to telecommunications keeps pace with changing technology. Already, advocates have scored some significant gains on this front. For one thing, the Telecommunications Act of 1996 strengthened two programs designed to keep basic telephone service affordable for low-income families: Lifeline, which reduced monthly charges for an estimated 4.4 million customers through 1997, and Link-Up America, which reduces initial connection charges. Under the new law and regulations that took effect in January 1998, consumers in all states will be eligible for Lifeline and Link-Up assistance. Each Lifeline consumer will receive $5.25 per month in federal support. In addition, for every dollar a state offers in universal service support, the federal government will kick in an extra 50 cents, up to a maximum of $1.75. Under this formula, a low-income consumer's bill could be reduced by $10.50 per month if the state contributes $3.50. The new law also established that qualifying customers can continue receiving basic telephone service even if they are unable to pay their long-distance charges.

The debate over universal service is far from over. The Federal Communications Commission (FCC) must periodically review what communications services should be covered by universal service policies. At the same time, states are free to establish their own definitions that go beyond federal conventions. Although the definition currently is drawn rather tightly, public interest advocates foresee a day when some services that currently aren't eligible for universal service support will be recognized as essential. For instance, Maxine Rockoff, a founder of the Information Technology Initiative at United Neighborhood Houses of New York, argues that our definition of universal service should be expanded to include at least three new components: access to a computer with a World Wide Web browser, a personal Internet email address, and the capability to make one's own information available via the Web.

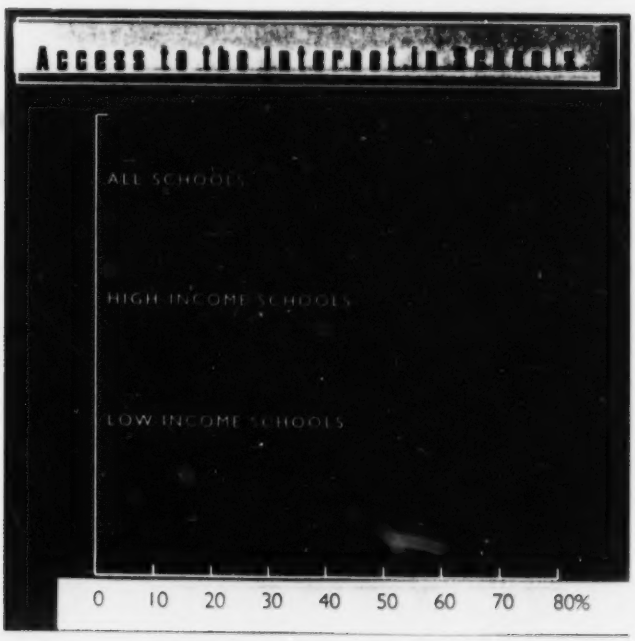
At the moment, public officials haven't been willing to go as far as Rockoff recommends. Even the states that have established the most expansive definitions have not required discounted rates for much beyond basic telephone service; they simply have defined basic services to include touch-tone dialing, access to long-distance carriers, and 911 services. Wisconsin has concluded that advanced services should be accessible in some form, though it doesn't require that they be provided to every home or be subsidized as substantially as basic services. California law-

makers recognize community organizations as eligible for universal service support, while Louisiana moved to include community networks as eligible for universal service discounts.

The issue is a difficult one for policymakers, who must strike a balance between competing interests when establishing universal service policies, notes Thomas W. Bonnet in *Telewars in the States: Telecommunications Issues in a New Era of Competition*. On the one hand, they do not want to let the market establish technologically wealthy and technologically disadvantaged classes. But they also do not want to require rate payers to subsidize new technologies for which there is no demand. As Bradley Stillman, then the legislative counsel for the Consumer Federation of America, told the *Wall Street Journal* in 1994: "I don't want to be forced to pay for the interactive video games or movies-on-demand of my neighbor down the street."

But at what point does a technology become important, as Montana Public Service Commission member Bob Rowe puts it, "to a household's ability to be part of the social and economic community"? Federal and state policymakers will need advice on this issue for years to come, and public-interest advocates will have a vital role to play in the continuing discussion.

Perhaps the most important addition to the government's universal service arsenal is a new provision, also launched by the 1996 telecommunications law, that primary and secondary schools and libraries can receive basic and advanced telecommunications services at discounts ranging from 20 percent to 90 percent below commercially available rates. The most disadvantaged schools and libraries, as well as those in rural areas, would receive the highest discounts. The discounts, also known as the



Source: "Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, Fall 1996," National Center for Education Statistics

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"e-rate," which could total as much as $2.25 billion per year and cover basic as well as advanced telecommunications services, will be financed with revenues from long-distance telephone charges.

Advocates like the National Urban League argue that the benefits of universal service should be broadened to include educational and developmental nonprofit organizations. These organizations, says the League, "are a vital part of the second-chance opportunity structure of these United States. Anything less than the full participation of community-based organizations in the resource pools of the Information Age is a disgrace." The League's B. Keith Fulton concludes that "the most competitive and forwarding-looking states will include all competent service organizations as part of their formula for sustaining programs and maximizing the state's workforce development initiatives."

Federal Programs

In the meantime, advocates should be ready to advise a number of federal agencies that will help shape the telecommunications future. The 1996 law established a Telecommunications Development Fund (TDF) to make loans to small businesses to promote competition in telecommunications and to stimulate new technology development. The fund, which will operate as a nonprofit corporation and will be capitalized with interest earned on money raised in spectrum auctions, can be used "to support universal service and promote delivery of telecommunications services to underserved rural and urban areas." As of March 1998, the TDF has $22 million to provide assistance and financing to small communications businesses.

The federal government also identified the National Educational Technology Funding Corporation as an organization that could help states leverage funds for educational technology. Deena Stoner, executive director at the Council for Educational Development and Research, predicts that the corporation will help states to finance improvements in school infrastructure so that school buildings can support technology. " Even if you could afford a computer for every four students, what about the infrastructure issues? You can't have computers without enough electric plugs or security systems, or with leaky roofs." The corporation will depend on congressional appropriations for its funding.

These new agencies join others that already have been encouraging more widespread access to the communications tools of the digital age. Since 1994, the Telecommunications and Information Infrastructure Assistance Program (TIIAP), part of the Commerce Department's National Telecommunications and Information Administration, has awarded 332 grants totaling more than $100 million for projects aimed at helping nonprofit hospitals, tribal and local governments, libraries, schools, and community centers use information technologies. Matching funds have raised the total amount generated to more than $250 million. By design, every TIIAP site serves as a laboratory on how to use new technologies to better serve the public. Some of the primary tenets of TIIAP grants include creating partnerships, supporting the end-user, providing access to the underserved, and developing tools to evaluate the impact of technology.

The Department of Housing and Urban Development (HUD), meanwhile, devised the Neighborhood Networks Initiative to provide training and access for residents of HUD-financed properties. Neighborhood Networks supports the development of community technology centers in public housing. Currently, there are over 340 Neighborhood Networks centers open, with more than 1,060 planned. HUD also was concerned that the increasing frequency of online government and commercial transactions would leave citizens served by its programs severely disenfranchised and ill-equipped to achieve self-reliance given a significant projected decrease in funding for federal rental assistance over the next five years. HUD provides some funds for Neighborhood Networks sites, but it says these should be considered "gap fillers."

State Regulatory Commissions

State regulatory commissions will be another important arena for decisions affecting equal access to new technologies. Here, too, public interest advocates have a major role to play.

The opportunities were illustrated by a case in Ohio, where the Legal Aid Societies of Dayton and Cleveland helped win concessions from Ameritech that led to establishment of a number of community technology centers. Representing clients including the American Association for Retired Persons, the Ohio Department of Education, and the Greater Cleveland Welfare Rights Association, the Legal Aid Societies accused Ameritech of overcharging customers. A negotiated settlement ultimately provided for establishment of 14 community computing centers in seven Ohio cities and creation of a fund that finances reduced telephone rates for low-income households and school technology efforts.

Public interest advocates also won a significant victory from the California Public Utilities Commission. In the late 1980s, the commission found that Pacific Bell (PacBell) had been signing up low-income and non-English-speaking customers for services like call waiting and call forwarding without taking adequate steps to obtain their consent. Typically in such regulatory cases, companies are required to make restitution or pay fines by providing credits to all their customers. But public interest advocates argued that the company had victimized a specific set of customers, not all telephone users, and that restitution should be similarly targeted. The commission agreed, and Pacific Bell was required to pay $16.5 million, plus another $4.5 million in interest, into a Telecommunications Education Trust Fund that financed research and education programs aimed at minority and low-income communities.

Some of this money went to technology initiatives. Some went to develop a public kiosk prototype, with a touch-sensitive screen and instructions in Spanish, that could be used by recent immigrants to learn about the U.S. telephone system. And seed money was provided to launch the California Telecommunications Policy Forum to educate leaders in the Latino communities about communications policy issues that could affect their constituencies.

More recently, as a condition of California regulators' approval of PacBell's merger with SBC Communications Inc., they required PacBell to refund to ratepayers the economic benefits of the merger in the amount of $248 million over five years. The $248 million is to be distributed in the form of $213 million in surcredits and $34 million to fund the "Community Partnership Commitment," under which PacBell promises to fund over $50 million in consumer education efforts plus an additional $32 million for other activities over a 10-year period. Advocates observe that the Community Partnership Commitment will provide valuable contributions to underserved communities in California, a more valuable economic benefit than small monthly rebates for PacBell's customers.

The latest planned merger between SBC and Ameritech Corporation will be reviewed by the Department of Justice and the Federal Communications Commission, as well as the state regulatory commissions in Ohio, Indiana, and Illinois. Local public interest groups should remain vigilant to ensure that the proposed benefits of major telecommunications mergers reach the communities that need these benefits most.

Other Anti-Poverty Efforts

Technology offers no magic wand that will eliminate poverty and isolation in America. To be effective, efforts to achieve equitable access to telecommunications must be part of a broader strategy that addresses the underlying problems of inner cities and disadvantaged rural areas. While such policies go far beyond the scope of this report, three specific issues illustrate this point.

School Equity. While schools in low-income communities have made strides toward acquiring new technologies, these gains are unlikely to have a lasting effect unless teachers are comfortable with new technologies. Unfortunately, schools in low-income communities have fewer resources than wealthy communities for teacher training and technology support. This is particularly worrisome since many children in low-income communities are not exposed to new technology at home. Those who are concerned about equality in the information age cannot afford to ignore debates in state legislatures about school funding for staff and training. Funding is only part of the answer, though. Long-term volunteers are needed to help schools and individual teachers learn how to use computers and the Internet effectively.

Job Training. Success in the job market of the future will require a high level of familiarity with technology. The Information Technology Association of America estimated in early 1997 that one in ten technology jobs goes unfilled because of a shortage of trained workers. Job training programs should focus on developing clients' skills with computers and communications tools. And such training should be closely linked to actual job opportunities. Otherwise, it may do little more than breed frustration. As numerous experts in the job training field have found, there is a tremendous need for closer collaboration in job training efforts between employers, educators, community organizations, and—given the rising expectation that welfare recipients find jobs—welfare agencies.

Transportation. Policymakers must consider the harmful effect communications technology has had in facilitating the flight of good jobs from central cities to the suburbs. Since only one out of five suburban jobs is easily accessible by public transportation, according to Hank Ditmar of the Surface Transportation Policy Project, improvements in public transportation, ride-sharing arrangements, and new shuttle programs should be a high priority. Planners also should explore whether more opportunities could be created for inner-city residents to telecommute. But ultimately, the best solution may be to find ways to nurture good jobs in the neighborhoods that have been losing them.

Community-Based Initiatives

Efforts to encourage the spread of information technologies in low-income communities stand little chance of achieving lasting success unless they are firmly rooted in the communities' own sense of their goals and needs. But simple as that observation sounds, we haven't always heeded it. All too often, community revitalization projects unintentionally have promoted the "perception that only outside experts can provide real help," argue John P. Kretzman and John L. McNight in *Building Communities from the Inside Out*. This can be disastrous, especially considering the ambivalence, or outright suspicion, with which many residents of low-income neighborhoods view technology.

Increasingly, however, technology activists stress the importance of nurturing individuals and indigenous community organizations that already provide help and support in the community, rather than trying to impose technology from the outside. If an effort is aimed at providing new Internet access points in a certain community, they say, residents should have a say in where the stations are set up. Low-income people should decide for themselves how these tools can best serve their interests.

"It is not just a question of access," explains Peter Miller at the Community Technology Centers' Network, "but who controls the content (and) how much control does the community have on the electronic environment serving it."

A first step is to identify and work with recognized information leaders in the communities. As part of a community networking project in Austin, Texas, for example, a team of graduate students from the University of Texas is engaged in social mapping—finding the key community members and organizations that people use to find information. "We want to discover who are the key community members," says project director Gary Chapman. "My long-term goal is to have the information networks map to this network."

Similarly, Joey Rodger at the Urban Libraries Council says public libraries could "deputize" community leaders, training them in communications technology so that they can spread the word. "If libraries can reach out and create barefoot librarians, these people can present the services and their significance to the community in the community's terms."

It isn't always obvious who community information leaders will be. In one Chicago neighborhood, for instance, Richard Krieg and his colleagues

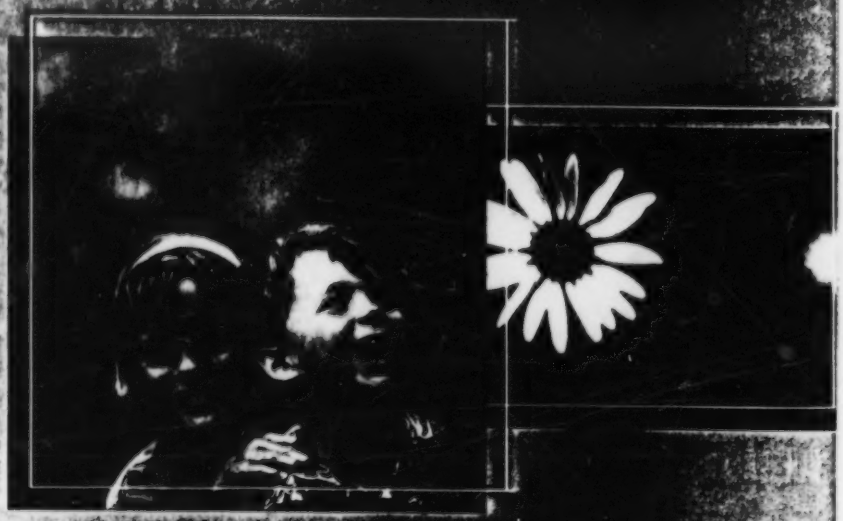
at the Institute for Metropolitan Affairs found that many people relied on a pharmacist's assistant for health information on topics ranging from child care to drugs. The Institute's challenge, according to Krieg, is to determine how to make information technologies available in ways that will increase the capabilities of such individuals.

Community-based organizations are particularly well-positioned to play a leadership role in spreading technology in low-income communities, mainly because they already have strong local ties. In New York, for instance, settlement houses provide a wide range of services to community residents—including pre-school and after-school programs for children, college readiness classes, adult education, GED preparation, job training, and senior centers. All these services could be enhanced by the thoughtful application of technology. As the settlement houses have learned, once computers and network connections become available in an environment where people are comfortable, residents readily embrace it.

"The experience of settlement houses in New York City suggests that community-based organizations can play a powerful role in making the benefits of technology both meaningful and available in poor urban neighborhoods," says Maxine Rockoff, who launched an ambitious technology program for the settlement houses.

Yet, as noted above, the Telecommunications Act of 1996 authorized the FCC to order telecommunications discounts only for schools, libraries, and rural health care providers. Community activists can encourage their state regulatory agencies to include community centers and other access programs among those eligible for discounts.

What's Working



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What's Working

While much remains to be done, communities around the country are using information and communications technologies to fight poverty and social isolation. Here, we highlight just a handful of projects that demonstrate the potential for creating new markets for small enterprise, providing job training programs, establishing after-school enrichment programs for at-risk youth, and supporting community organizations as information content providers.

Using technology to support community-based industry: ACENet

Citizens in Appalachia are using interactive technologies to tie their communities into the new world economy. The Appalachian Community Economic Network, or ACENet, was started in 1985 to help small businesses in the impoverished rural area find new markets. With ACENet's help, more than 20 entrepreneurs have found customers through the Public WebMarket, a project orchestrated by the Center for Civic Networking. To help small businesses get started, ACENet has developed a computer loan program. Beneficiaries include the Runges, owners of a mom-and-pop machine shop operation with three employees, who were able to increase their profitability with a computer leased from ACENet and purchase their own, more sophisticated computer system. Similarly, three women living in rural West Virginia used a computer leased from ACENet to coordinate shipping and distribution for a network of 40 home-based knitters. The network, in partnership with a larger company, uses the Internet to receive orders for custom knitwear from all over the world. Another entrepreneur, a mother with four children, receives email orders from around the world for herbs she grows.

Beginning in the fall of 1997, ACENet set out to train 18 students in the use of technology, entrepreneurship, basic workplace skills, and how to be a consultant. At the end of the year, the students will either own or work at a technology consulting and training facility, or they may decide to move on to higher education in order to further their technology skills.

Training 20th-century citizens for 21st-century jobs: The South Bristol Learning Network

People are not "disadvantaged," argues John O'Hara. They are "dislocated from the creation of wealth." What's more, he adds, "if they do not become involved in the creation of digital wealth, they will become even more dislocated."

O'Hara, who believes that "digital wealth" will be the most valued commodity in the global economy, secured a $1 million challenge grant from the British government in 1993 to establish the South Bristol Learning

Network (SBLN) as a private nonprofit organization dedicated to creating an advanced information infrastructure. Dislocation was readily apparent in South Bristol, which had lost more than 40,000 jobs in the 1980s.

SBLN began by training 50 long-term unemployed South Bristol residents in information technologies, including email, database creation, web page development, CD-ROMs, business marketing, and the Internet. Once trained, the staff went into the community and evaluated 300 local education groups, community centers, and businesses to assess their information needs and better understand how to create a local information society. From these assessments, SBLN developed a plan to raise the community's awareness of information technologies, provide training, and build partnerships. In the process, they created a market for the trainers' new skills. SBLN staff went on to run skill workshops, provide technical services for local businesses, and give presentations about the Internet and information technologies. Of the 50 staffers originally hired, only seven have returned to the unemployment rolls.

O'Hara now heads the CyberSkills Workshops, dedicated to replicating the design and success of SBLN elsewhere in England, Europe, and the United States. More than 10,000 people representing 1,200 organizations have participated in the workshops. The South Bristol Learning Network model is being applied in Burlington, Vermont, at the Old North End Community/Technology Center, a project of Chittenden Community Television (CCTV) headed by CCTV's executive director Lauren-Glenn Davitian. CCTV and the city of Burlington started ONE C/TC to serve as a community media center and a local center for technology training. Like the South Bristol Learning Network, ONE C/TC recruits disenfranchised community members to serve as trainers and staff. More recently, it began focusing more on providing job training and information on how to develop small businesses.

A trusted service provider incorporates technology into its programs: United Neighborhood Houses of New York

Settlement houses provide Head Start programs, health education, job training, teen counseling, music, drama, language classes, and much more to at least half a million of New York City's residents. So it was a safe bet that if the settlement houses made the Internet available, people would show up—and they have.

The United Neighborhood Houses of New York (UNH), an umbrella organization formed to help the settlement movement participate in social reform efforts, launched its Information Technology Initiative in 1991 with two overarching goals: to consolidate recordkeeping among settlement house programs so that caseworkers could spend more time meeting with their clients and coordinating services with other nearby organizations, and to provide safe, supportive, friendly telecommunications-based resources for community use. According to technology training coordinator Michael Roberts, UNH has helped nine settlement houses establish computer networks and get Internet access. Each of these houses has created

"neighborhood-based family rooms" as spaces for community members to use computers.

The settlement houses introduce community members to technology by incorporating computers into other programs. After-school tutors for children now use educational software, for example, and job training workshops use computer databases. More than 29 settlement house programs have integrated computers into their services.

Maxine Rockoff, who launched the program, recalls one group of 10 parents of children who were enrolled in Head Start programs at UNH. Six did not speak English, and none had ever used a computer before. Ten minutes after starting their first computer class, they were working in pairs and surfing the World Wide Web. One pair found an Ecuadorian website in Spanish that posted local newspapers and scores from regional soccer games. Another woman was so inspired by the session she signed up for a course in English as a second language.

Community demand for computer time has been heavy. Melissa Nieves, the librarian at a settlement house known as the University Settlement, says there is a long waiting list to use the 10 multimedia stations in the computer lab.

UNH currently is concentrating on training staff in business, email, and Internet applications so that the settlement houses can be sure that their clients are getting the most out of the resources provided to them. UNH family rooms are understaffed, but that is a problem that increased funding can easily solve. The big question, according to Roberts, is not simply "how do you weave technology into existing programs, but once you have, how do you assess if it's working?"

Rockoff, meanwhile, now advises the city of New York on how it can streamline its administrative requirements of service providers. In a recent interview, Rockoff reported that "the Settlement created great places for the community to learn about technology, but we didn't succeed as much as we wanted in reducing the paperwork load on the settlement houses."

Public institutions increasing access: Union City Schools and Libraries Online!

Many schools and libraries are using their technology facilities and their expertise in teaching to help communities gain skill with information technologies. Examples of this include the Union City School District in New Jersey and the libraries participating in the Libraries Online! initiative, which became the basis of the Gates Library Foundation.

Union City's school reform effort, supported by Bell Atlantic's donations of technology and technical support, has been one of the most successful and widely reported public-private educational technology partnerships. In 1989, Union City schools were about to be taken over by the state because of students' poor academic performance. Then the school district adopted several reforms, including revision of its curriculum. The district formed a partnership with Bell Atlantic so that the Christopher

Columbus Intermediate School, formed in 1993 to reduce overcrowding in other schools, would receive multimedia-on-demand interactive applications. All Christopher Columbus students and teachers were provided with computers to use at home.

According to a 1994 report prepared by the Education Development Center, a nonprofit research organization, student scores on achievement tests increased dramatically throughout the district after the school reform plans were implemented, with scores at Christopher Columbus topping the district average.

Parents as well as students have benefited. Union City has been running a Parent University in which students and their parents sign up for classes on such topics as family math and family science. Parents can take English as a second language and computer classes. Adriana Burke, the Parent University coordinator, reports that these programs have been an overwhelming success. "The parents see how we are doing a good job with their children," she says. "They see how much the children use computers, and they want to get involved." She says the program has inspired many parents to go back to school to improve their workplace skills.

Libraries Online!, a joint project of Microsoft Corporation, the American Library Association, and the Center for Technology in the Public Library, was created to increase Internet access to underserved communities through local libraries. Initially, nine library systems in the United States received staff training, computer hardware, and cash grants worth $3 million. Participants included Charlotte-Mecklenberg County, North Carolina; Baltimore County, Maryland; the Mississippi Library Commission; the State Library of South Dakota; Brooklyn, New York; Tucson-Pima County, Arizona; Los Angeles, California; and Seattle and Pend Oreille County, Washington. Each of these library systems offered training and support to small businesses, families, and students who were not likely to have access.

According to an outside evaluation, the time and money invested in the program had been put to good use. Of all respondents, 98 percent stated that they would return to the library to use the computers again, 83 percent said that they "had accomplished the task they had set out to do," and 62 percent said that they would "take advantage of learning more about computers now that they have access in the library." Fully 87 percent of users surveyed stated that they did not have Internet access at home.

The success of the Libraries Online! program prompted Microsoft chair Bill Gates and his wife, Melinda French Gates, to create The Gates Library Foundation in June 1997. The new foundation will spend $200 million over five years to help public libraries, primarily those in low-income areas, gain Internet access. Microsoft will supply an additional $200 million of software for the foundation to give away. The foundation also will provide training and support for library staff. It hopes to work with half of the 17,000 libraries in the United States and Canada. Gates stated that his vision is that "people will take for granted that you can walk into your local library, get the latest book, and sit down at a computer." The

first round of grants, announced in early 1998, will benefit more than 1,000 libraries, including 95 percent of the public libraries in Alabama, the foundation's first state partner.

Providing support and information for community technology centers: CTCNet

Community Technology Centers' Network (CTCNet) grew out of the Playing to Win storefront access centers founded by Toni Stone, a high school math teacher. CTCNet is composed of more than 250 computer access centers throughout the United States and Europe. All are committed to work toward a society where each member is "equitably empowered by technology skills and usage." CTCNet sponsors an annual conference, and six times a year it publishes a news update describing activities at member organizations, analyses of relevant policy developments, and discussions of funding, software, and partnership possibilities. Members also receive a start-up manual to help them work through the challenges of starting and maintaining a technology center. Regional CTCNet coordinators provide technical assistance to local centers. CTCNet has been working closely with the Department of Housing and Urban Development on the Neighborhood Networks initiative, and many neighborhood networks will become members of CTCNet. Also in the works are sites sponsored by the National Urban League and Bell Atlantic. Many of the initiatives discussed in this report are CTCNet members.

Using technology to strengthen neighborhood communications: The AFN-Neighborhood Network and MUSIC/LUV

The AFN-Neighborhood Network is a joint project of the Austin FreeNet (AFN), the Austin Learning Academy (ALA), and the 21st Century Project at the University of Texas' Lyndon B. Johnson (LBJ) Graduate Program in Public Policy. Together, the partners are studying the theoretical and the practical side of increasing access in Austin. A grant from the National Science Foundation supports eight graduate students and two faculty members who are studying how best to implement a community access project. Their findings have led to the Austin Access Model, a plan in which researchers and community members will develop community computer networks in six areas of Austin. Each network will offer training, neighborhood public access sites, and links to the AFN.

The 21st Century Project and the ALA received a $248,000 TIIAP matching grant to create the first community network in a roughly five-block section of East Austin known as the 11th and 12th Street Corridor. Most of East Austin's 70,000 resident are poor, and many are non-English-speaking.

Families participating in ALA classes on technology, English as a second language, or parenting are working with students in the LBJ program to design the AFN-Neighborhood Network. The development of the

network will take place in conjunction with the implementation of a $9 million redevelopment grant for the areas from HUD. The content will be developed specifically for and by the region by local nonprofits, organizations, and businesses.

Linking Up Villages (LUV) is a Boston-based project designed to reinvigorate communities through local electronic bulletin boards and software called Multi-User Sessions in Community (MUSIC). "The LUV motto is, rather than focusing on National Information Infrastructure, to us, NII is really about Neighborhood Information Infrastructure," says Alan Shaw, president of MUSIC, Inc., the for-profit counterpart to LUV.

Shaw designed the MUSIC software a few years ago at the Massachusetts Institute of Technology's Media Lab. It enables participants to create an online version of their communities, complete with "buildings" and, within the buildings, "rooms." Subject to rules adopted by individual communities, individuals can "stroll" through this graphical "virtual neighborhood," obtain information on community services and activities, make their own contributions to the database, participate in live "chat" groups, or engage in sustained discussions through various community forums. All that's needed is a computer and a modem.

In Dorchester, a working-class Boston neighborhood, neighbors who got together online formed a food co-op, a neighborhood watch, and a community newsletter. In Newark, New Jersey, where a TIIAP grant helped LUV install a more extensive system, neighbors have put together a database on adult education programs, an employment hotline, a "political action" room, and discussion groups on everything from AIDS to recipes. Some local doctors have come online to answer health questions.

Although LUV primarily operates in Newark, its sphere of influence has been expanding. LUV's programs in Boston include a TIIAP grant to collaborate with the Boston Public Schools for a project, called Networking for Student Success, which will connect six Boston high schools and five community-based organizations and business partners, as well as the establishment of a web-based community safety network, called Citizens For Safety. In San Francisco, LUV is working with AT&T and the Greenlining Institute on The Signature Learning Project, which will connect parents whose children are in elementary school with the school's teachers and administrators. The families involved in The Signature Learning Project will receive MUSIC software in addition to the home computers needed to run it. In its Cincinnati project, LUV is teaming up with the Urban League of Greater Cincinnati and MYCOM in order to establish community network access centers, called Cybervillages, in the Cincinnati area.

LUV gives away its software to needy communities, and provides technical and start-up consultations for about $2,500. The big cost for a community wanting to develop a system is the computers. An $8,000 grant from the Wood Foundation helped put computers into a dozen neighborhoods in Boston. TIIAP provided $106,000 to help the Newark community purchase 35 computers and pay other start-up costs. LUV encourages communities to put computers in libraries and other public access locations and to ask businesses to donate their used computers.

In the last two years, LUV has made great strides to ensure that all communities could reap the benefits of their MUSIC software. Originally designed to run on Macintosh systems, MUSIC is now available in PC format, can be accessed through LUV Internet connections, and will soon be accessible through an NT server.

Providing underserved youth with enrichment and training for the jobs of the future: Break Away Technologies, Plugged In, and National Urban League Youth Achievement Initiatives

Youth initiatives address a special need in low-income communities. Children and young adults in neighborhoods struggling with persistent poverty have few opportunities for enrichment and positive growth within their immediate neighborhoods, and their opportunities to explore the world outside those boundaries are limited because they lack transportation, money, and trustworthy guides. Just as adults in these communities are isolated from jobs, kids are isolated from opportunities to grow and develop. Interactive technologies and the resources available on the World Wide Web can offer them new learning experiences. Kids who have been shut out can use online services to visit sites that show museums, cities, and wildlife preserves they otherwise would not get to see, and they can communicate with people who live far beyond neighborhood boundaries.

After-school access programs provide enrichment opportunities and training for the jobs and schools of the future. And, just as importantly, they help teenagers constructively fill the otherwise unstructured period between 3 p.m. and 6 p.m. (Research done at the request of the California State Legislature, for example, has revealed that the majority of teen pregnancies are conceived in this time period.)

In most communities, crime committed by youth is growing faster than most other types of crime, according to Steve Snow, director of Charlotte's Web, the community access network in Charlotte, North Carolina. "Young people see less and less reason to play by the rules," he argues. "If young people are not engaged in society (and electronic technology is part of a matrix of key interventions needed), then we won't be able to build the walls in the nation's suburbs high enough."

Break Away Technologies proves the value of youth initiatives. Created by Joseph Loeb and run originally out of his garage, it now has a 15,000-square-foot space in the Crenshaw Corridor, an ethnically diverse, inner-city neighborhood in Los Angeles. Break Away has about 100 computers—primarily Pentiums, many of which were donated by Microsoft. The center is open from 9 a.m. to 8 p.m. Monday through Friday. Each day, about 400 elementary school students from the West Los Angeles Christian Academy come to the center for workshops. Each afternoon, about 50 teens wander in to take classes and surf the Internet. On Fridays and Saturdays, classes and services are available for adult learners.

Break Away also works with groups in the community. A teen development group, Rites of Passage, comes in for classes, as do various kids living in group homes. Break Away leads young people through a series of technology courses, each emphasizing character development and personal responsibility, as well as technology. As students advance through computer classes, they take on more responsibility, working first as study partners and then as mentors.

Loeb remembers one of the participants: "A young lady, probably about 22 or 23, came to Break Away when it was still in my garage to learn computer programming to try to get a job. She had no experience with computers. So she learned some programming, which back then was Lotus, and then got a job at Sony. She's still there today and is doing very well." Loeb says the center seeks to make students "visible examples of leadership in the community." While computers aren't essential in achieving that goal, the technology component of the program also helps prepare youths for the labor market. "If someone is computer literate and well-mannered, then he can go anywhere and be comfortable," says Loeb.

Plugged In, Inc. works to develop self-esteem and leadership qualities in young people in a similar style to Break Away. Open for four years now, Plugged In is based in a storefront between a check-cashing center and a boarded-up store on one of the main roads through East Palo Alto. It offers 30 different classes, ranging from beginning Macintosh, desktop publishing, and web page design, to virtual cross-country trips. The Center is open from 9 a.m. to 9 p.m. Monday through Friday and 1 p.m. to 4 p.m. on Saturdays and Sundays. It has about 35 computers and a staff of 10 people.

Most of the classes Plugged In offers are in partnership with local groups who bring in their clients. For example, Free At Last, a drug recovery center across the street, offers Plugged In's services to its clients.

Several teens, who started working with Plugged In during the 1996 Youth Employment Program, now run an after-school program for elementary school children between 3 p.m. and 5 p.m. each day. The younger kids can get help on homework, play on the computers, and surf the Net, or work on arts and crafts. From 5 p.m. to 9 p.m., teenagers come in to take classes or work on projects.

Teens who have completed Plugged In classes run Plugged In Enterprises, a for-profit arm of Plugged In. This business includes a community drop-in center, which provides staff and support if someone walks in and needs help with a resume, designing and printing up a flyer, making copies, or doing research on the Internet. A web design group creates web pages for local businesses, and offers desktop publishing services. Businesses pay up to $1,500 for a site. The teens who create and maintain sites are paid from $7.50 to $15.00 an hour, while the rest of the money earned goes into college funds maintained for them.

Eleven youths, ranging in age from 13 to 18, all graduates of Plugged In courses, participated in a rigorous three-week team-building and training session and are now monitoring a teen chat channel on America Online. The teens work in two production teams, taking turns researching new topics and moderating online discussions.

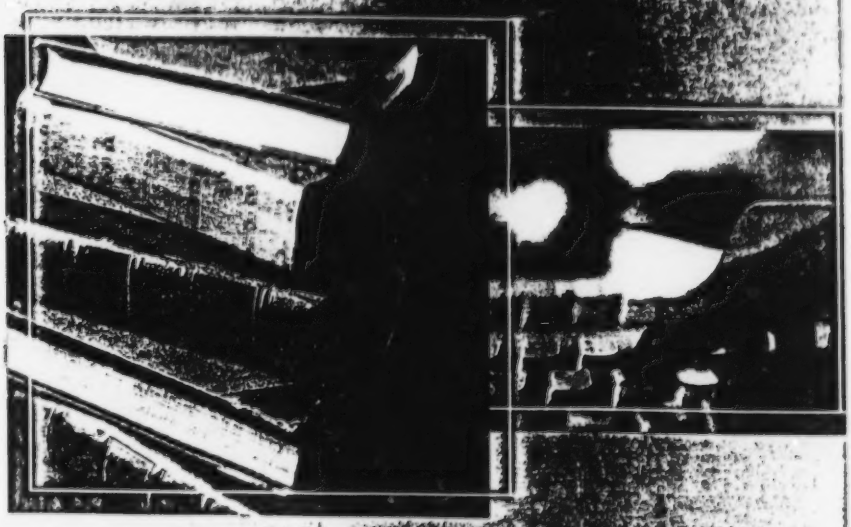
Aside from its money-making activities, Plugged In receives its funding from private corporations and federal funds.

The National Urban League has also stepped up its focus on youth achievement initiatives. While the Urban League's first technology-based center opened in Los Angeles in 1968, early work focused on adult learners and used mainframe computers for COBOL programming, data entry, and system maintenance. More recent initiatives are networked and include information and workforce literacy programs for children and adults. They also provide curriculum-based and non-structured community-based access to the Internet. Some 30 Urban League affiliates have "Technology Education and Access" (TEAC) centers in cities such as Seattle, Newark, Sacramento, and Los Angeles. The League aims to create 115 of these centers. B. Keith Fulton, director of the League's technology center initiative, says the goal is to create "a safe place for young people and caring adults to come after school hours and on Saturdays to explore state-of-the-art technology in a supportive environment." The centers offer classes if participants want to develop a specific set of skills, but they also welcome youth and adults who simply want to drop in to explore on their own.

"Technology can even the playing field," says Milton J. Little, Jr., the League's executive vice president and chief operating officer. "It's changing the nature of interactions, and our young people need to be ready." Fulton adds, "the Information Age is spawning a new basic—information literacy—and all of our children must learn to access, interpret, and respond to information."

In 1996, Bell Atlantic provided $1 million to help the National Urban League to create two high-tech access centers in Boston, Massachusetts and Binghamton, New York. In 1997, the National Urban League won a TIIAP grant to expand its technology center initiative into Newark, New Jersey, and Baltimore, Maryland. The Microsoft Corporation named the League one of three recipients of its "1997 Nonprofit Technology Leadership Grants" and donated $2.5 million in software. The League is using this software to put all of its 115 affiliates on a common applications platform. League affiliates in Tennessee, North Carolina, Ohio, New Jersey, and Washington are also running technology-based initiatives for youth and adults. As Milton Little sees it, these efforts continue a longstanding Urban League tradition. "Eighty-eight years ago, the National Urban League was founded to help African Americans migrating from the rural south to the urban north," he notes. "Now, our country is experiencing a societal transformation again, but this time with global implications and unparalleled opportunities."

Fulton is hopeful about the future. "We know how to introduce information and communications technologies into low-income communities," he says. "The only remaining question is whether we as a society are going to make enough of an investment in underserved communities to make the necessary program and policy connections."



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Resources

This section links you with the sources, programs, and studies mentioned in the report, and suggests additional areas for exploration.

Overview—Trends and Policy

Access Denied
Austin Long-Scott
Outlook, vol. 8, no. 1, Summer 1995
Maynard Institute
longscott@athena.sfsu.edu
www.maynardije.org

Austin Long-Scott is an associate professor of journalism at San Francisco State University. His piece, "Access Denied," published by the Maynard Institute's *Outlook*, describes the risks that low-income and ethnic minority communities could be redlined as communications companies roll out advanced services. Long-Scott explores the implications if low-income communities and communities of color do not have access to community technologies that are becoming increasingly important for democratic participation.

Computing in the 90's: The Great Divide
Amy Harmon
Los Angeles Times, October 7, 1996

Coupled with results from a phone survey, this article argues that Californians from both ends of the economic spectrum believe that technological literacy is important, particularly for children, but that only wealthy Americans have regular access to computers and the Internet. The article also considers the societal implications if this divide is not addressed. The telephone survey included interviews with 1,200 California adults of various socioeconomic backgrounds.

Electronic World, Unchecked Problem?
Michelle Singletary
Washington Post, March 4, 1997

The article outlines the federal government's commitment to stop using paper checks by 1998 and discusses the effects of this transition on recipients of government services. The piece details what percentage of people do not use banks, why they don't use them, and what steps the government is taking to ensure that these citizens aren't penalized by a new electronic system.

Focus on Generic Skills for Information Technology Literacy
Robert H. Anderson and Tora K. Bikson
RAND Corporation
January 1998
www.rand.org/publications/P/P8018

In the context of providing universal access to electronic mail and related online access, the authors argue that generic, rather than application-specific, knowledge and skills should be the focus of computer literacy efforts, both for citizen participation as well as for job-related skills.

For Computer Have-Nots, A Web of School Problems
David Nakumura
Washington Post, March 11, 1998

Nakamura shows how students with limited or no access to computers are falling behind their peers in the quality of their homework, the diversity of information and opinions available to them, and both technical and non-technical skills that will be needed in college and the workplace.

Gateways to Cyberspace: Discounts for Libraries and Schools are an Investment in the Future
Mary R. Somerville
Washington Post, October 23, 1996

This Op-Ed by the president of the American Library Association details the important role of schools and libraries in providing access to the Internet for all citizens, and explains the problems of cost that libraries

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face when trying to provide access. The article was written before the FCC's Federal-State Board on Universal Service made its recommendations, but the discussion on the importance of these public institutions in the digital age and the challenges they face are still very salient.

Getting America's Students Ready for the Twenty-First Century: Meeting the Technology Literacy Challenge
U.S. Department of Education
June 29, 1996
www.ed.gov/Technology/Plan

This Department of Education report on education and technology in elementary and secondary education highlights success stories and outlines why the Clinton Administration feels that technology is a crucial part of education today. The book also has statistics on what percentage of U.S. schools are connected, estimates on costs, and information on the role of the federal government in supporting technological innovations in the classroom. The Technology Literacy Challenge describes specific steps for the integration of technology into education for the country.

High Technology and Low-Income Communities: Prospects for the Positive Use of Advanced Information Technology
Donald A. Schön, Bish Sanyal, and William J. Mitchell, editors
MIT University Press, forthcoming
web.mit.edu/sap/www/high-low
(draft chapters)

This set of papers from distinguished social scientists, planning practitioners, and technologists, as well as community organizers and activists, takes a pragmatic but critical look at the potential impacts of information technology on the form and function of cities; the political and social lives of communities; and the prospects for access to employment and education on the part of low-income populations.

Information Technology and Low-Income, Inner City Communities
Richard Krieg
The Journal of Urban Technology
vol. 3, no. 1, Fall 1995

In a very useful overview, the article illustrates how much inner cities are excluded from public institutions, resources, and communications tools. Krieg also charts different types of technology applications that could be used to remedy inner-city residents' isolation. This issue of the *Journal of Urban Technology* on "Information Technologies and Inner City Communities" is a good resource.

The Learning Connection
Chris Conte
Benton Foundation
June 1997
www.benton.org/Library/Schools

This report examines how educators are grappling with the difficult interplay of technological change and educational values. It also identifies key factors that make the connection work, and reviews major players in the education technology arena.

Making Government Work: Electronic Delivery of Federal Services
Office of Technology Assessment
September 1993
Government Printing Office
(www.gpo.gov/ota)
www.wws.princeton.edu.80/~ota/disk1/1993/9333_n.html

The report details the range of government services that could be delivered electronically. It analyzes both the advantages of such transitions—saves money, shortens transaction time, and puts more resources at the fingertips of more people—and the disadvantages—requires advanced planning and could leave poorer Americans behind in access to services. The publication has examples of successful applications and improved service delivery as well as what must

be taken into account if these telecommunications tools are going to benefit all Americans.

The New Definition of Universal Service
Benton Foundation
June 1997
www.benton.org/Updates/summary.html

This report summarizes Federal Communications Commission's decisions concerning the principles on which universal service policy will be based, what package of services will constitute basic service, and support for low-income consumers.

New Jersey Telephone Plan Neglects the Poor, Critics Say
Melody Petersen
The New York Times, April 17, 1997

As high-tech communications services are introduced, who's getting them first and who's getting passed over? This article describes public interest advocates' efforts in New Jersey to ensure the less immediately profitable regions of the state aren't bypassed by Bell Atlantic for fiber optic cable service. The article suggests that advocates' fears may be coming to fruition, because although "the company has hooked up suburban business parks and large corporations and set a schedule for suburban neighborhoods... [it] has not yet made specific plans for the thousands of poor people who live in the state's largest cities."

The Next Generation of Universal Service: Discounts for Schools and Libraries
Benton Foundation
December 10, 1996
www.benton.org/Library/Nextgen/discounts.html

Benton's publication presents the Federal-State Joint Board on Universal Service's proposals to the Federal Communications Commission on how to implement the Telecommunications Act's universal service provisions, particularly the required discounts for schools and libraries for communications services.

Preparation for Addressing Universal Service Issues: A Review of Current Interstate Support Mechanisms
Common Carrier Bureau
Federal Communications Commission
February 23, 1996
www.fcc.gov/Bureaus/Common_Carrier/Reports/univserv.txt

This extremely detailed document prepared by an FCC Universal Service Task Force focuses on why and how universal service policies should be changed. For the non-policy junkie, the first few pages have a great, fairly simple overview of exactly which populations do not have phone service, the most likely reasons why, the current universal service policies designed to make phone service more affordable, and why these are still falling short. The report then analyzes in depth how aspects of phone service and universal service policies could be adjusted.

Rural America at the Crossroads: Networking for the Future
Office of Technology Assessment
1991
Government Printing Office
(www.gpo.gov/ota)
www.wws.princeton.edu:80/~ota/disk1/1991/9136_n.html

An in-depth analysis of rural communities, the potential role for telecommunications in these communities, and the stakes if these areas are not able to adapt to changing global economies, this report by the OTA details economic statistics and offers examples of telecommunications infrastructures that could be established in rural America. Published in 1991, it's not a source of the most recent data, but the report's coverage of the long-term trends that will be affecting rural communities in the coming year is helpful.

Society's Digital Divide
Janet Kornblum
C|Net
March 14, 1997
www.news.com/News/Item/0,4,8834,00.html

Kornblum interviews James Katz, author of a Bellcore study on Internet access, funded by the Markle Foundation. Katz argues that the "digital divide" for the economically impoverished, ethnic minorities and women is cause for serious concern and will get worse instead of better in the future.

States.org
www.states.org
and
www.states.org/contents/about/info

States.org is an ambitious attempt to provide all communications-related information for each state. If you search by state, you may see what information a state has about its universal service plans, its definition of basic telephone service, and much more. States.org has not yet compiled or linked to all information in all states, but it's an excellent place to start.

The Technological Reshaping of Metropolitan America
Office of Technology Assessment
September 1995
Government Printing Office (www.gpo.gov/ota)
www.wws.princeton.edu.80/~ota/disk1/1995/9508_n.html

Printed in 1995, this publication by the now defunct Office of Technology Assessment describes how communications and information technologies are affecting rural, suburban, and urban areas in the United States. It evaluates how advances in technology are allowing companies to change location, the type and numbers of workers they hire, and what they hire workers for. It also does an excellent job of assessing the potential negative impacts of technological advances on regions already economically at risk, such as urban cores.

Telewars in the States: Telecommunications Issues in a New Era of Competition
Thomas W. Bonnett
Council of Governors' Policy Advisors
1996
www.ctrcolumbia.edu/vii/univsvce/universa.htm

Telewars in the States evaluates states' role in telecommunications in the wake of the Telecommunications Act of 1996. Bonnet includes chapters on the increasing significance of telecommunications for states, the evolution of the telephone industry, state regulation of telecommunications policy, and, most importantly for this report, the policy choices facing the states. Chapter Five has a helpful description of federal universal service policies and some of the possible options for the states in this area.

Universal Access to Email: Feasibility and Societal Implication
Robert H. Anderson, Tora K. Bikson, Sally Ann Law, and Bridger M. Mitchell
Center for Information Revolution Analyses
RAND Corporation
1995
www.rand.org/publications/MR/MR650/note.html

This final report of a two-year RAND study looks at the value of universal email and recommends all citizens have access to technology. The report focuses on fundamental social, economic, international, and technical issues related to providing universal access to email within the United States.

Urban Poverty and Access to I.T.: A role for local government,
Lisa J. Serron and John B. Horrigan
Journal of Urban Technology
Dec. 1997, p. 61, vol. 4, no. 3

This article examines the impact on society that inadequate and inequitable access to technology will have, arguing that "failure to address the current imbalances in

[information technology] users will result in a society with more deeply entrenched imbalances between historically privileged and historically disenfranchised groups."

Using Technology to Revitalize Low Income Communities: Transforming the Work Force
Yvonne Craver
Multifamily Executive
August 1996

This article, written by the chief executive officer of Edgewood Technology Services, discusses one way in which technology can be used to assist low-income communities: to bring jobs into the communities. Founded in Edgewood Terrace apartment complex in Washington, DC, ETS is a business whose employees live in the complex and "use state-of-the-art computerized workstations... [to] perform a wide variety of data-related services." According to the article, the benefits of having the business in the same building as its employees live is twofold. Not only is it convenient for employees to work so close to their homes, but much more significantly, it provides an economic boost for the entire community, rather than for a very few fortunate individuals.

Welfare to Work Difficulties
"All Things Considered"
National Public Radio
May 20, 1997
www.npr.org/ramfiles/970520.atc.15.ram
(Real Audio file)

This piece, reported by Kathleen Schalch, describes the problems many welfare recipients will face trying to hold new jobs because of the inadequacy of cities' public transportation systems. Commutes that would take 30 minutes in a car can add up to several hours by bus. Most public transportation systems still run on the outdated premise that people are coming from the suburbs into the cities for work. Many new jobs are appearing in corporate parks in the suburbs, and it is difficult to get from one suburban area to another by public transportation without having to go into and then back out of the city.

What's Fair: American Beliefs about Distributive Justice
Jennifer L. Hochschild
Harvard University Press, 1981

Through a series of interviews and research with Americans from all sectors of society, Hochschild illustrates how people decide what goods and services should be equally available to every one. While not specifically about technology, the book is useful in understanding cultural mindsets.

What's Up With Wages
Alan B. Krueger
Goldman Sachs
U.S. Economic Research
November 13, 1997

This article examines how wages are barely keeping pace with consumer price index increases.

When Work Disappears: The World of the New Urban Poor
William Julius Wilson
Knopf, 1996

Wilson, an unofficial advisor to President Clinton and a respected thinker on issues of race and poverty, offers his take on welfare and inner-city joblessness. He argues that the disappearance of unskilled, decent-paying jobs is the main source of U.S. urban problems.

Where Jobless Could Meet Jobs
The Washington Post, April 29, 1997

This editorial explores a major problem of the northern Virginia's "booming" technology industry—plenty of work and not enough technologically skilled laborers to do it. The editorial suggests that a widely overlooked but practical solution to the problem

would be to train the District's unemployed to do the technical jobs in northern Virginia. According to the editorial, "the gap is only one part distance—and about nine parts skills."

Surveys and Statistics

1997 National Survey of U.S. Public Libraries and the Internet
John Bertot, Charles R. McClure, Patricia Diamond Fletcher
American Library Association Office for Information Technology Policy
May 1997
www.ala.org/oitp/research

Using data collected between March and May 1997, this report goes into great detail about the numbers and types of Internet access at public libraries throughout the nation. Major findings include that more than 72 percent of all public libraries have some type of Internet connection, up from 44.6 percent just one year before. Rural libraries are 20 percent less likely than urban libraries to have access. The survey also found that more than 60 percent of all libraries provide public access to the Internet.

Advanced Telecommunications in U.S. Public Elementary and Secondary Schools
Sheila Heaviside, Tolja Riggins, and Elizabeth Farris (Westat, Inc.)
U.S. Department of Education
National Center for Education Statistics
Fall 1996
www.nces.ed.gov/pubs/97944.html

This survey took information from public schools on the availability of the Internet and other advanced telecommunications tools for students and teachers. It documents typical support mechanisms for advanced communications and charts schools' future plans for increasing technology in their programs. Most of the data has been broken down by a school's location (urban, rural, etc), percent minority student body, percent of student body on school-lunch programs, geographic region, and size of enrollment.

Beyond Universal Service: Characteristics of Americans without Telephones, 1980-1993
Jorge Reina Schement
Benton Foundation
1994
www.benton.org/Library/Universal/Working1/working1.html

Schement analyzes the 6 percent of American citizens who do not have phone service and discusses why this group—primarily composed of the elderly, the poor, blacks, Hispanics, and women with children—is not able to maintain phone connections. He also discusses the troubling effects of excluding these populations from such a critical communications tool.

Bridging the Digital Divide: The Impact of Race on Computer Access and Internet Use
Thomas P. Novak, Donna L. Hoffman
Project 2000
Vanderbilt University
February 2, 1998
www2000.ogsm.vanderbilt.edu/papers/race/science.html

This report analyzes demographic patterns of Internet access and computer usage from late 1996 to early 1997. It systematically examines the differences between African Americans and whites in the United States in regard to the influence of education and income on access.

Buildings, Books, and Bytes: Libraries and communities in the digital age
Benton Foundation
November 1996
www.benton.org/Library/Kellogg

Americans love libraries, but will they follow them into the digital age? A report prepared by the Benton Foundation and funded by the W.K. Kellogg Foundation reveals what experts and the public think. Based

on a national public opinion survey and interviews with leading library and information professionals, the report offers some first steps in helping libraries lead their communities into the digital age.

Closing the Digital Divide: Enhancing Hispanic Participations in the Information Age
Anthony Wilhelm
Tomas Rivera Policy Institute
April 1998
www.cgs.edu/inst/trc.html

This study, not available online as of publication time, found that home computer ownership among Hispanics has risen significantly in the last few years, up from 13 percent in 1994 to 30 percent in 1998. But, the report reminds us, 34 percent of Hispanics have still never used a computer.

Computers and Classrooms: The Status of Technology in U.S. Schools
Education Testing Service (ETS)
1997
www.ets.org/research/pic/compclass.html

This ETS policy information report provides a snapshot of the use and effectiveness of technology in American schools. Print copies are available for $9.50; electronic copies (in PDF format) are available on their website. A good summary of the report's findings can be found at www.ets.org/research/pic/cc-sum.html.

Ensuring Telephone Access in the Digital Age
Mark Cooper
Center for Media Education
February 25, 1998
www.cme.org/telephoneaccess.html

This report finds that 18 percent of poverty-level households in the U.S. have no phone service, including 3 percent of those with children. Even at incomes of twice the poverty level, 15 percent of households with children have no phone service. Overall 6 percent of U.S. households have no service.

Home Technology Report Executive Summary
Nielsen Media Research
July 1996
www.nielsenmedia.com/interactive/news/hotech-summary.shtml

This large phone survey evaluates what percentage of U.S. households have computers, Internet access, video games, cell phones, etc., by age, income, and other variables. See also their *Fall 1997 Internet Demographic Study* at www.nielsenmedia.com/interactive/commercenet/F97.

Motivations for and Barriers to Internet Usage: Results of a National Public Opinion Survey
James Katz, Ph.D
Bellcore
October 6, 1996
katz@bellcore.com
www.markle.org

Katz's report, funded by the Markle Foundation, analyzes responses from an October 1995 phone survey that asked not only who in the household was on the Internet, but, if no one, why not, and what would make it easier. The phone survey found among other things that 69 percent of the 2,500 surveyed had heard of the Internet, but never been on it, and 15 percent of those questioned had never heard of it.

NUA surveys
www.nua.ie/surveys

This service compiles Internet-related survey data and demographics from a variety of sources and posts it to their website. In addition, they run a mailing list that sends out weekly updates of various Internet usage information, with a particular eye on "how many are online?" A type of Internet demographics news service

The State of Working America 1996-97
Lawrence Mishel, Jared Bernstein, and John Schmitt
Economic Policy Institute
1997
www.epinet.org/epswa-ex.html

The report found that between 1979 and 1995, real wages dropped 23 percent for people with less than a high school education and 12 percent for those with only a high school diploma, while they rose 4 percent for college graduates and 12 percent for people with advanced degrees.

Telephone Penetration by Income By State
Alexander Belifante
Federal Communications Commission
Common Carrier Bureau
Industry Analysis Division
January 1998
www.fcc.gov/ccb/stats
(report #PNTRIS97.ZIP)

This document provides the data on phone subscribership as of November 1997, broken down by household income. It also analyzes the differences in phone penetration growth between states that have Lifeline and states that don't. The first few pages have an easily digestable summary; the rest of the report is numbers. Hard copies may be purchased from International Transcription Services, inc. at 202.857.3800.

Technology in the American Household: Explosive Growth, Uncertain Destinations
Pew Research Center for The People and The Press
October 16, 1995
www.people-press.org/tech.htm

This early report analyzes who owns computers, uses email, and is on the web by income, age, education, and gender. It also reports how often people get online, what types of list-services people are using, and the politics of those online.

U.S. Household PC Penetration Passes 45 percent
Roger C. Lanctot
Computer Retail Week, March 11, 1998

Citing statistics collected by Computer Intelligence's 1998 Consumer Technology Index, the story points out that ownership of home computers jumped 5 percent in 1997, translating into the fact that over 45 percent of all households own home computers.

Web Users are Looking More Like Americans
David Birdsell, Douglas Muzzio, David Krane, Amy Cottreau
Harris Survey Unit of Baruch College and Louis Harris & Associates
The Public Perspective, April/May 1998
www.ropercenter.uconn.edu/pubper/pdf/pp93b.pdf (Adobe PDF file)

This study found that the population accessing the World Wide Web increasingly reflects the general population: men and women almost equally use the web; and "the web population now reflects a racial breakdown statistically indistinguishable from U.S. Census data for the general population." The report admits, however, that differences still exist in the areas of education and income. "A person is still more likely to bump into web users who have college degrees and incomes of at least $50,000." Adults with a high school education or less (52 percent of the adult American population) account for only 19 percent of those using the web.

Organizations and Projects Pursuing Technology Equity in Low-Income Communities

Alliance for Community Media
Bunnie Riedel, Executive Director
666 11th Street, NW, Suite 806
Washington, DC 20001-4542
Tel: 202.393.2650
www.alliancecm.org

The Alliance for Community Media is a national membership organization that focuses on achieving equal access to electronic media. The Alliance provides technical assistance, promotes successful public interest applications of technology, and advocates for regulatory support for its members—over 950 public, educational, and government access centers.

Alliance for Community Technology
Katherine Willis, Director
of Program Development
c/o School of Information
University of Michigan
610 E. University Avenue
Suite 4020
Ann Arbor, MI 48109-1259
Tel: 734.763.2281
Fax: 734.647.8045
kwillis@umich.edu
www.communitytechnology.org

In an effort to address the gap between the potential of technology and the capacity of people and communities to use it to solve problems, ACT promotes the creation, use, evaluation, and propagation of appropriate technologies in support of communities.

Appalachian Center for Economic Networks (ACENet)
94 North Columbus Road
Athens, OH 45701
Tel: 740.592.3854
Fax: 740.593.5451
www.seorf.ohiou.edu/~acenet

The Appalachian Center for Economic Networks (ACENet) connects citizens to community-based networks and entrepreneurs to new and larger markets via the World Wide Web. Using ACENet's services, which include a computer leasing program, Appalachian residents work to improve the region's impoverished economy.

AFN-Neighbor Network
c/o Austin Learning Academy
PO Box 6923
Austin, TX 78762-6923
Tel: 512.457.9194

A project of the Austin Learning Academy (www.alaweb.org), the Austin FreeNet (www.austinfree.net), and the 21st Century Project at the LBJ School of Public Affairs, University of Texas (www.utexas.edu/lbj/21cp), the AFN-Neighbor Network works with East Austin residents to create a community network with local content, nearby access sites, and training programs. Eventually, the project will create community networks in six underserved areas of Austin and connect each to the Austin FreeNet.

Break Away Technologies
3417 W. Jefferson Boulevard
Los Angeles, CA 90018
Tel: 213.737.7677
Fax: 213.299.8226
www.breakaway.org

Founded by Joseph Loeb in the wake of the Los Angeles riots, Break Away Technologies started as a computer center in Loeb's garage and has grown into a 15,000-foot access center in South Central L.A. Using donated computers with Pentium processors, Loeb runs technology classes for neighborhood residents and area schools. Break Away uses technology to teach leadership and responsibility, facilitating students' successful entry into the increasingly technology-oriented workforce.

BrookLynX
Brooklyn Information
& Culture (BRIC)
(formerly the Fund for the Bureau
of Brooklyn)
30 Flatbush Avenue, Suite 427
Brooklyn, NY 11217
Tel: 718.855.7882
Fax: 718.802.9095
bklynx@brooklynx.org
www.brooklynx.org

The organization supports artistic, cultural, and informational community projects for Brooklyn, New York, hosting such events as the yearly Celebrate Brooklyn Arts Festival, Brooklyn Community Access Television, and the Meet Me in Brooklyn cultural tour. BrookLynX, one of the organization's projects, acts as a community network and, with the help of a TIIAP grant, is connecting three community computing centers to the Internet and assisting in the development of a staff training program and web pages for each center.

California Telecommunications Policy Forum
Armando Valdez, Chair
210 San Antonio Circle, Suite 152
Mountain View, CA 94022-1234
Tel: 650.917.6600
Fax: 650.917.6601
AValdez@aol.com

California Telecommunications Policy Forum is a communications network for community leaders in California among low-income and Latino neighborhoods. Initially supported by a grant from the Telecommunications Education Trust (TET), the Forum spearheads dialogues on the roles activists in California might play in policy development, particularly telecommunications policy, to ensure that their communities are served rather than excluded by new communications infrastructures. See also "Staking Out the Public Interest in the Merger Between Pacific Telesis and Southwestern Bell Corporation" (www.ucan.org/ucan/news/white_1.htm).

Charlotte's Web
Steve Snow, Executive Director
119 E. Seventh St.
Charlotte, NC 28202
Tel:704.332.1610
shsnow@charweb.org
www.charweb.org

Charlotte's Web is a regional interactive telecommunications network in Charlotte, North Carolina. In addition to affordable Internet access, the service provides low-cost community training courses, and local community information terminals.

Community Technology Centers Network (CTCNet)
Peter Miller, Network Director
55 Chapel Street
Newton, MA 02158
Tel: 617.969.7100
Fax: 617.332.4318
ctcnet@edc.org
www.ctcnet.org

CTCNet is a membership organization of over 250 computer access centers in the United States. These access centers may be partnered with schools, museums, community centers, or churches, but they all promote the idea of equitable access to technology. CTCNet provides its affiliates with policy updates, advocacy information, training opportunities, and financial tips.

Community Technology Institute
Patricia Barry, Executive Director
PO Box 61385
Seattle, WA 98121
Tel/Fax: 206.441.7872
info@cvm.org
www.cvm.org

Community Technology Institute seeks to improve the delivery of social services and relieve human suffering through their Community Voice Mail program. CVM now operates in 25 cities—including Boston, Houston, Los Angeles, and Spokane—bringing community-wide access to voice mail for an estimated 15,000 homeless or phoneless people every day.

Computers in Our Future
3580 Wilshire Boulevard, Suite 1660
Los Angeles, CA 90010
Tel: 213.368.2373
Fax: 213.368.2371
ciof@aol.com
www.compfuture.org/compfuture

Recognizing that more than half of all new jobs require technology literacy, and that information literacy costs California business an estimated $4 billion annually, the California Wellness Foundation established Computers in Our Future, a $6 million, five-year initiative to develop 11 community computer training centers in low-income neighborhoods across California. Partners include Community Partners, The Children's Partnership, and CompuMentor.

Downtown Neighborhood Learning Center
Marcia Newman, Executive Director
Margaret Quintana, Program Manager
1001 West Jefferson Street
Phoenix, AZ 95007-2913
Tel: 602.256.0784
Fax: 602.256.2524
dnlc@swlink.net
www.swlink.net/~dnlc

DNLC, located in downtown Phoenix, Arizona, is a street-front adult education program serving homeless and other disadvantaged adults since 1989. Services include community voice mail, basic adult education, GED diploma preparation, career testing and computer literacy and Internet skills.

Eastmont Computing Center/ OCCUR
David Geilhufe, Director
7200 Bancroft Avenue
Suite 209, Eastmont Town Center
Oakland, CA 94605-1970
Tel: 510.382.0555
Fax: 510.268.9065
geilhufe@hooked.net
www.eastmont.net

The Eastmont Computing Center currently provides high school students with 18 months of training and placement services to transition youth into information tech-nology employment. We also provide connectivity and technical resources to the local community supporting schools, libraries, and churches in addition to our own public computer and Internet access site.

Eiffel Project
Bruce Lincoln, Manager of Community Outreach and Development
Institute for Learning Technologies (ILT)
Columbia University
525 West 120th Street, Box 144
New York, NY 10027
Tel: 212.678.4000
Fax: 212.678.4048
info@ilt.columbia.edu
www.ilt.columbia.edu/eiffel

Funded by a U.S. Department of Education Challenge Grant, the Eiffel Project is a collaboration of ILT, the Center for Collaborative Education, and the New York City Board of Education, that seeks to improve dramatically the educational experience of disadvantaged children in urban schools.

Email for All Campaign
International Advisory Group
875 Avenue of the Americas,
Suite 1005
New York, NY 10001
Tel: 212.268.1443
Fax: 212.268.1113
iaclaa@aol.com
www.iaginteractive.com/emfa/about.htm

This new project of the Markle Foundation seeks to encourage the use of new communications technologies for socially beneficial purposes. In May 1998, the campaign "hosted" an online conversation about four themes pertaining to universal service: Universal E-Mail, Universal Internet, Networking Communities, and Private and Public Roles. Archives and reports from the event may be found at www.iaginteractive.com/emfa/uac.htm.

Gates Library Foundation
P.O. Box 3189
Redmond, Washington 98073
Tel: 425.882.1200
Fax: 425.556.0218
info@glf.org
www.glf.org

The Gates Library Foundation was formed by Bill and Melinda Gates to provide public libraries in low-income areas with the computer equipment required for community access to digital information. In addition, the foundation supports training and technical assistance to library staff members to effectively manage computer systems, use digital information, and provide appropriate assistance to their patrons. An earlier Microsoft project, Libraries Online! (www.librariesonline.org), provided grants, training, and technical assistance to public libraries, enabling them to offer public access to personal computers and the Internet. This $15 million project benefited libraries in 260 communities in the United States, Canada, and Ireland between 1995 and 1997.

Inner City Youth Technology Program
Brenda Atkins Lockley, Executive Director
Neighborhood Housing Services, Inc.
901 Western Avenue
Pittsburgh, PA 15233
Tel: 412.321.0121
Fax: 412.321.6411
or
Chuck Half, Funding Coordinator
Tel: 412.487.4545
Fax: 412.487.2894
chalf@ctronsoft.com

A project of Pittsburgh's Neighborhood Housing Services, Inc., the program provides free neighborhood access for middle school children to desktop computing, Internet, and multimedia technologies. Piloting in Pittsburgh this summer (1998), if successful, NHS plans to offer the service to other cities across the nation.

International Education and Resource Network (I*EARN)
Lisa Jobson
475 Riverside Drive, Suite 540
New York, NY 10115
Tel: 212.870.2693
Fax: 212.870.2672
iearn@iearn.org
www.iearn.org

I*EARN, which has been pioneering the use of communications technology for education since 1988, has recently created an initiative that involves youth previously excluded from the Internet—namely those young people who are institutionalized, not enrolled in schools, homeless, runaways, or orphans. Working with PS 106 run by Covenant House in New York, the Fourth World Movement, and Harlem and South Bronx church groups, the program uses I*EARN's existing international network of educators and students to provide technical skills and educational opportunities that might otherwise be unavailable.

Kids Computer Workshop
Norman Eisen, President
1201 Connecticut Avenue NW
Washington, DC 20036
Tel: 202.778.1824
Fax: 202.822.8106
www.kcw.org

Kids Computer Workshop brings technology and mentoring to Washington's at-risk children, teaching computer skills with a focus on activities that develop literacy and critical thinking. The project provides a safe, supportive place during out-of-school hours where young people are exposed to positive rolemodels and can build confidence and self-esteem.

Legal Aid Society of Dayton
Ellis Jacobs, Litigation Director
Telephone & Technology Access Project
333 W. First Street, Suite 500
Dayton, OH 45402
Tel: 513.228.8088 x111
Fax: 513.449.8131

Jacobs represents low-income community organizations in telecommunications proceedings before the Ohio Public Commission and the FCC. He also chairs both the Ohio Community Computing Center Network, which administers the Amentech Settlement Community Computing Friends, and the Universal Service Assistance Advisory Committee, which oversees a telephone lifeline program in Ohio.

LUV/MUSIC
Linking Up Villages
33 Algonquin Street
Dorchester, MA 02124
Tel: 617.436.8048
Fax: 617.282.2020

Linking Up Villages (LUV) is a project designed to reinvigorate communities through local electronic bulletin boards and software called Multi-User Sessions in Community (MUSIC). MUSIC software allows users to walk through a "virtual neighborhood," obtaining information on community services and events. LUV sets up networks and gives free software to needy communities. They finance their efforts partly with revenues produced from selling their software to companies and communities that can afford it, and partly through grants received from sources like the Department of Commerce's Telecommunications Information Infrastructure Assistance Program (TIIAP).

MCI Library Link
Christa Poston (MCI public affairs)
Tel: 202.887.2757
www.librarylink.com

Between 1993 and 1998, MCI has awarded over $1 million in technology grants to 400 public library branches to fund technology projects. "As a leading Internet provider, MCI understands that limited public access is one of the greatest barriers to a community realizing the benfits of advanced communications technology," said Timothy F. Price, President and Chief Operating Officer of MCI. "Through the LibraryLINK program, MCI is empowering our nation's libraries and the communities they serve with access to information technology."

National Consumer Law Center
18 Tremont Street, Suite 400
Boston, MA 02108
Tel: 617.523.8010
Fax: 617.523.7398
or
1629 K Street, NW, Suite 600
Washington, DC 20006
Tel: 202.986.6060
Fax: 202.463.9462
consumerlaw@nclc.org
www.nclc.org

Founded more than twenty-five years ago at Boston College School of Law, NCLC's staff of 11 attorneys addresses the legal problems faced daily by low-income and financially distressed families, ranging from repossessions, debt collection abuses, home improvement frauds, usury, and bankruptcy to utility terminations, fuel assistance benefit programs, utility rate structures, and utility deregulation. They have a substantial library of reports and newsletters pertaining to consumer rights in the area of energy and utility, although the full text of their reports is only available by purchasing hard copies.

National Urban League
B. Keith Fulton, Director
Technology Programs and Policy Department
120 Wall Street
New York , NY 10005
Tel: 212.558.5300
Fax: 212.344.5332
bkfulton@nul.org
www.nul.org

Founded in 1910, the National Urban League is the nation's premier social and civil rights organization. The League has operated technology-based initiatives in low-income communities since 1968. Through its 115 Urban League affiliates in 34 states and the District of Columbia, the League promotes advocacy and program services focusing on the social and

educational development of youth, economic self-sufficiency, and racial inclusion. The League's Technology Programs and Policy department was founded in 1996 to bring the benefits of information and communications technology to low-income citizens.

National Urban Technology Center
Carol Lawrence, Director of Administration
1204 Third Avenue, Suite 124
New York, NY 10021
Tel: 718.398.4525
Fax: 718.398.4470
contact@cfs.urbantech.org
www.urbantech.org

This nonprofit organization seeks to prepare inner-city communities for full participation in the Information Age by helping them create technology and telecommunications infrastructures, and establish community training centers with computer courses and technical support, a Youth Leadership Academy that provides teens school-to-work opportunities, and a computer repair training program. Their website also acts as a type of community information network, a doorway to the Internet for the people they serve.

Neighborhood Networks
U.S. Department of Housing and Urban Development
9300 Lee Highway
Fairfax, VA 22031
Tel: 888.312.2743
Fax: 703.934.3156
nnetworks@cfkaiser.com
www.hud.gov/nnw/nnwindex.html

If all goes according to plan, this HUD-sponsored program will result in HUD-supported housing developments equipped with computer workstations, linking residents with educational and job training programs, microenterprise and telecommuting opportunities, and improved access to health care, wellness, and community and social service programs.

Neighborhoods Online
Institute for the Study of Civic Values
1218 Chestnut St., Rm. 702
Philadelphia, PA 19107
Tel: 215.238.1434
Fax: 215.238.0530
Edcivic@libertynet.org
libertynet.org/community/phila/nol.html
www.libertynet.org/~edcivic/iscvhome.html

The Neighborhoods Online network, which was founded in 1992, provides local updates and calendars for activists in Philadelphia and links to data sets, resources, and other community organizing groups for activists around the nation. Ed Schwartz initiated Neighborhoods Online while at the Institute for the Study of Civic Values, an organization dedicated to the study of grassroots organizing.

Ohio Neighborhood Resources Page
(formerly Urban University and Neighborhood Networks)
uac.rdp.utoledo.edu/DOCS/UUNN/UUNN.HTM

The UUNN was a cooperative venture of 7 urban universities and more than 60 neighborhood-based organizations (NBOs) representing the Ohio cities of Akron, Cleveland, Cincinnati, Columbus, Dayton, Toledo, and Youngstown. While the UUNN has formally ended, the University of Toledo Urban Affairs Center maintains a variety of services to support neighborhood organizing and development in Ohio. The paper referred to in this report, "Limited Access: The Information Superhighway and Ohio's Neighborhood Based Organizations" (uac.rdp.utoledo.edu/DOCS/UUNN/accessTHtm) describes UUNN's work to study NBOs and how the Internet could improve their functioning.

Old North End Community/ Technology Center (ONE C/TC)
Chittenden Community Television (CCTV): Old North End Community/Tech Center
294 North Winooski Avenue
Burlington, VT 05401
Tel: 802.862.3966
Fax: 802.860.2370
onectc@cctv.org

ONE C/TC is a "learning network" established in Burlington, Vermont, based on the South Bristol Learning Network (SBLN) model. Like the SBLN, ONE C/TC started by recruiting the unemployed and instructing them to become the trainers and staff of the ONE C/TC technology training centers. At the technology training centers, the economically disadvantaged members of the community can acquire the knowledge and skills they need to get back on track in a job market that puts a very high value on computer skills.

Plugged In, Inc.
Bart Decrem, Executive Director
1923 University Avenue
East Palo Alto, CA 94303
Tel: 415.322.1134
Fax: 415.322.6147
www.pluggedin.org

Located in one of Silicon Valley's poorest communities, Plugged In runs an after-school program for elementary school children, and from 5 until 9 p.m., teenagers can take classes or work on projects at the center. Plugged In has a for-profit arm, called Plugged In Enterprises, which is run primarily by area teens. Among other things, Plugged In Enterprises provides assistance with tasks such as resume writing and Internet searching, designs websites for local businesses, and has even begun developing multimedia applications and programs.

Public Web Market
development.civicnet.org/webmarket

The Public Web Market, sponsored by the Center for Civic Networking, supports regionally-based microenterprise and economic development in depressed regions of the country by assisting community-based organizations and small business in the use of electronic commerce.

Schools and Libraries Corporation
1023 15th Street, NW
Washington, DC 22205
Tel: 202.289.2663
Fax: 202.289.7836
www.slcfund.org

The Schools and Libraries Corporation is a not-for-profit group administering the new "e-rate" program to bring discounted telephone service and Internet connections to schools and libraries.

South Bristol Learning Network/ CyberSkills Association
South Bristol College Hartcliffe Centre
Hartcliffe, Bristol, UK BS13ORJ
Tel: 44.117.946.5403
Fax: 44.117.964.1021
www.sbln.org.uk

The South Bristol Learning Network (SLBN) was created by John O'Hara to reanimate the workforce of the economically depressed region of South Bristol, England. In September, 1993, O'Hara used a one-million-dollar challenge grant he had received from the British government to train 50 long-term unemployed residents of South Bristol in information technologies. The newly trained staff evaluated local groups and businesses and went on to give presentations and workshops on how these groups could make new technologies work for them. O'Hara is now focused on replicating the design and success of the SLBN elsewhere in England, Europe, and the United States through CyberSkills workshops.

Stockyard Area Development Association (SADA) Computer Ownership for Neighbors
3288 West 58th Street
Cleveland, OH 44102
Tel: 216.631.1270
stockyards@juno.com
little.nhlink.net/nhlink/sada

In the summer of 1995, SADA began a neighborhood development project that provides low-cost computers and affordable Internet access to their community's low-income residents. They have provided over 200 computers, and have been successful in getting dial-up Internet access through a local PC users group and the Cleveland Public Library. The project is currently setting up their own community network.

Tech Center
Tent City
359 Columbus Avenue
Boston, MA 02116
Tel: 617.578.0597
Fax: 617.578.0755
tentcity@juno.com

Tech Center, a joint project of Tent City Corporation and The Massachusetts Institute of Technology (MIT), provides free or low-cost access to all aspects of information technology. They focus in particular on reaching previously disadvantaged communities. Programs include an after-school program to assist with homework, an open access evening program for adults to hone applications skills or update their resumes, and a network administrator program that teaches how to build, repair, and maintain computers. For every four computers a student fixes, she or he may take one home.

Union City Schools
Gary Ramella
3912 Bergen Turnpike
Union City, NJ 07087
gramella@union-city.k12.nj.us
www.union-city.k12.nj.us

The combination of desperately needed curriculum reform in the Union City School District and and Bell Atlantic's willingness to provide the schools with multimedia on-demand interactive applications resulted in one of the most successful and talked-about public/private educational technology partnerships. The report referred to in this document, "Union City Interactive Multi-Media Education Test Trial," may be found at www.edc.org/CCT/ccthome/tech_rept/CCTR3.

United Neighborhood Houses of New York, Inc. (UNH)
Michael Roberts, Director,
Information Technology Initiative
70 West 36th Street, 5th Floor
New York, NY 10018-8007
Tel: 212.967.0322
Fax: 212.967.0792
mroberts@unhny.org
www.unhny.org/unh/iti.html

UNH began its Information Technology Initiative in order to accomplish two goals: to consolidate recordkeeping among settlement house programs so that case workers can spend more of their time with their clients; and to provide "safe, supportive, friendly telecommunications-based resources for community use." Since that time, UNH has facilitated the introduction of computers and educational software to a countless number of community members, and more than 29 settlement house programs have integrated computers into their services.

Virtually Wired
Coralee Whitcomb, Founder
19 Temple Place
Boston, MA 02111
Tel: 617.542.5555
info@vw.org
www.vw.org

Virtually Wired, a community access center in downtown Boston, provides services such as computer training and web classes.

West Oakland Housing
Oakland, CA

The city of Oakland, in partnership with IBM and Bridge West Oakland Housing, Inc., began a $1.2 million project to install network computers (NCs) in each of the 206 apartments currently being renovated. The project stems from a 1997 city policy to make it easier for public housing residents to learn critical job skills, and which required future public housing units be equipped with computers. The system is expected to be completed early in 1999. IBM will be designing and supplying the educational content. Articles and further information may be found at IBM (www.pc.ibm.com/networkstation/news/housing.html) and NC World (www.ncworldmag.com/ncworld/ncw-02-1998/ncw-02-ibmoakland.html), which promises to follow the project's progress.

Women's Economic Agenda Project (WEAP)
Ethel Long-Scott, Director
449 Fifteenth Street, 2nd floor
Oakland, CA 94612
Tel: 510.451.7379
Fax: 510.968.8628
weap@sirius.com
www.sniconsulting.com/weap

WEAP's Computer and Telecommunications Skills Center (CTSC) provides access for small women-, and minority-owned businesses to high-tech equipment and applications. The computer training program will offer basic, intermediate, and advanced computer training to prepare low-income women and minorities for good paying jobs and advancement to better positions.

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Organizations and Agencies Working in Related Fields

American Library Association
50 E. Huron
Chicago, IL 60611
Tel: 312.944.6750 or 280.2163
Fax: 312.944.6750 or 280.3257
ala@ala.org
www.ala.org
and
ALA Office for Information Technology Policy
1301 Pennsylvania Avenue, NW
Suite 403
Washington, DC 20004
Tel: 202.628.8410 or 800.545.2433
www.ala.org/oitp

Created in 1876, American Library Association members include school, public, academic, and research libraries, professional librarians, and individuals from across the country. ALA works "for the development, promotion, and improvement of library and information services and the profession of librarianship in order to enhance learning and ensure access to information for all." In Washington, ALA has an office for Information Technology Policy which focuses on issues of telecommunications policy that affect libraries and library patrons, including universal service and first amendment issues.

Benton Foundation
Andrew Blau, Program Director
Communications Policy & Practice
1634 Eye Street, NW
Washington, DC 20006
Tel: 202.638.5770
cpp@benton.org
www.benton.org

The Benton Foundation's Communications Policy & Practice Program promotes public interest values and noncommercial services for the National Information Infrastructure through research, policy analysis, print, video and online publishing, and outreach to nonprofits and foundations. Its website contains updates on communications policy and upcoming events; a forum for discussion; publications such as bulletins, policy briefings, and working papers; and links to hundreds of online communications and public interest resources.

Center for Media Education (CME)
Jeffrey Chester, Executive Director
1511 K Street, NW, Suite 518
Washington, DC 20005
Tel: 202.628.2620
Fax: 202.628.2554
cme@cme.org
www.cme.org

CME studies and advocates for the development of public interest telecommunications policy. It focuses primarily on children's needs in the nation's media environment. CME works with national and state advocates from the library, education, and media community to provide increased access for at-risk children and their families. Its 1997 report, "Connecting Children to the Future: A Telecommunications Policy Guide for Child Advocates," helps child advocates understand the importance of promoting state and federal policies that support equitable access to and use of new information technologies, and the linkages between issues they care about and the developing information infrastructure.

Department of Housing and Urban Development (HUD)
451 Seventh Street, SW
Washington, DC 20410
www.hud.gov

The Department of Housing and Urban Development is the Federal agency responsible for national policy and programs that address America's housing needs, that improve and develop the nation's communities, and enforce fair housing laws. One of their many programs, Neighborhood Networks, encourages property owners, managers, and residents of HUD-insured and -assisted housing to form teams to develop computer centers where residents can learn job skills and become more economically self-reliant.

Federal Communications Commission (FCC)
1919 M Street, NW
Washington, DC 20554
Tel: 202.418.0200
www.fcc.gov

The FCC is an independent government agency responsible for regulating interstate and international communications by radio, television, wire, satellite, and cable. It also maintains an extensive website with universal service proposals, calendars for hearings and decisions on regulations, and instructions for how to file comments in FCC proceedings. The site also has data on phone subscribership and policies to make phone service more affordable.

National Community Building Network
672 13th Street
Oakland, CA 94612
Tel: 510.893.2404
Fax: 510.893.6657
network@ncbn.org
www.ncbn.org

The National Community Building Network is an alliance of locally driven urban initiatives working to reduce poverty and create social and economic opportunity through comprehensive community-building strategies, including their publication, "Community Builders Guide To Telecommunications Technology." Their website provides daily headlines and policy updates of particular concern to those working to improve their communities.

National Consumer Law Center
18 Tremont Street, Suite 400
Boston, MA 02108
Tel: 617.523.8010
Fax: 617.523.7398
consumerlaw@nclc.org
www.consumerlaw.org

The National Urban Law Center provides support on issues involving consumer fraud, debt collection, consumer finance law, energy assistance programs, and sustainable home own-

ership programs. The Center addresses legal problems faced daily by low-income and financially distressed families ranging from repossessions, debt collection abuses, home improvement frauds, usury, and bankruptcy to utility terminations, fuel assistance benefit programs, utility rate structures, and utility deregulation.

National Foundation for the Improvement of Education (NFIE)
Carol Edwards, Director of Programs
1201 16th Street, NW
Washington, DC 20036
Tel: 202.822.7840
www.nfie.org

Created in 1969 by the National Education Association, the NFIE provides grants and technical assistance to teachers, education support personnel, and higher education faculty and staff to improve student learning in the nation's public schools. NFIE is home to The Road Ahead program, a $3 million program to support the use of communications technology in the classroom, funded by proceeds from Microsoft Chairman and CEO Bill Gates' book by the same name.

United States Department of Education
United States Department of Education Technology Initiatives
www.ed.gov or
www.ed.gov/Technology

The United States Department of Education website is a good source of information on Universal Service proposals, statistics on the percent of schools connected to the Internet, and examples of schools with comprehensive technology programs. The site also details the Administration's funding programs and policies on educational technology.

U.S. Office of Technology Assessment
Superintendent of Documents
Government Printing Office
PO Box 371954
Pittsburgh, PA 15250-7974
Tel: 202.512-1800
Fax: 202.512-2250
www.gpo.gov/ota

The Office of Technology Assessment (OTA), which for 23 years had advised Congress on technology issues, closed its doors September 29, 1995 after the 104th Congress voted to withdraw funding. Its website, which contains a number of dated but still excellent reports, can now be found at Princeton University's Woodrow Wilson School (www.wws.princeton.edu:80/~ota). Printed copies of past OTA reports are available from the Superintendent of Documents at the Government Printing Office.

Urban Libraries Council
Joey Rodger, President
1603 Orrington Avenue, Suite 1080
Evanston IL 60201
Tel: 847.866.9999
www.clpgh.org/ulc

The Urban Libraries Council comprises over 100 large public libraries and the corporations that work with them. Its members serve more than half the public library patrons in the country. Among its focal areas are promoting urban libraries as urban assets and supporting their members' efforts to serve urban youth.

Research Organizations

Baruch College Harris Survey Unit
David Birdsell, Associate Professor
City University of New York
School of Public Affairs, F-2021
17 Lexington Avenue
New York, NY 10010
Voice: 212.802.5957
Fax: 212.802.5968
David_Birdsell@baruch.cuny.edu
www.baruch.cuny.edu

The Baruch College Survey Unit is a multidisciplinary team of scholars and practitioners at the School of Public Affairs. Since its inception in January 1994, the Unit has asked timely questions and supplied timely answers to government, nonprofit, and business policymakers with detailed opinion research and technical analysis and advice on a broad range of programmatic and policy concerns.

Computer Intelligence (formerly ZD Market Intelligence)
Ziff Davis, Inc.
3344 N. Torrey Pines Court
La Jolla, CA 92037
Tel: 619.450.1667
Fax: 619.452.6857
www.ci.zd.com

Computer Intelligence is a source of fact-based information on computer and communications industry trends, product developments, and buyer activity.

Economic Policy Institute
PO Box 383080
Cambridge, MA 02238
Tel: 617.547.2950
query@epn.org
www.epinet.org

The Economic Policy Institute is a nonprofit, nonpartisan think tank that publishes reports to broaden the public debate about strategies to achieve a prosperous and fair economy.

Educational Development Center (EDC)/Center for Children and Technology (CCT)
96 Morton Street
New York, NY 10014
Tel: 212.807.4200
Fax: 212.633.8804
www.edc.org

EDC conducts research on how different groups in society perceive and use technology. One of its projects, "Access By Design," develops approaches to increase access for under-represented groups, proposes ways to make technology more inclusive, and crafts a national agenda to promote equity and diversity in technology policy and practice. This project is a collaboration between EDC's CCT and the American Association for the Advancement of Science (AAAS).

Educational Testing Service
Rosedale Road
Mailstop 04-R
Princeton, NJ 08541
Tel: 609.921.9000
Fax: 609.734.5410
etsinfo@ets.org
www.ets.org

In addition to being the source of all those educational tests we had to take in school (SAT, AP, GRE, ad infinitum), ETS also conducts research about trends in education, including education technology.

National Center for Education Statistics (NCES)
www.nces.ed.gov

NCES is the arm of the U.S. Department of Education that collects statistics and publishes reports about the state of U.S. education. The website is an excellent resource for current data about technology use in schools and related demographics.

Nielsen Media Research
299 Park Avenue
New York, NY 10017
Tel: 212.708.7500
Fax: 212.708.7795
www.nielsenmedia.com

Nielsen Media Research conducts research and publishes statistics and demographics about computer ownership and Internet access and usage, including their Fall 1997 CommerceNet/Nielsen Media Research Landmark Internet Demographics Study (see the previously listed "Surveys and Statistics.").

Pew Research Center for the People and the Press
1150 18th Street, NW Suite 975
Washington, DC 20036
Tel: 202.293.3126
www.people-press.org

Originally a project of Times Mirror (1990-1995) and now sponsored by the Pew Charitable Trusts, the Center conducts public opinion research pertaining to media and public policy.

Project 2000
Thomas P. Novak
Donna L. Hoffman
Vanderbilt University
Nashville, TN 37203
www2000.ogsm.vanderbilt.edu

Project 2000 is a research center at Vanderbilt University devoted to studying the commercialization of emerging media.

Quality Education Data (QED)
1700 Lincoln Street, Suite 3600
Denver, CO 80203
Tel: 800.525.5811
Fax: 303.860.0238
www.qeddata.com

While focused on helping corporations better understand the education market, this research company's data is very revealing, especially in terms of how much money schools spend on technology.

Thomas Rivera Policy Institute
241 East Eleventh Steet
Steele Hall, Third Floor
Scripps College
Claremont, CA 91711-6194
Tel: 909.621.8897
Fax: 909.621.8898
trc@cgs.edu
www.cgs.edu/inst/trc.html

The Institute conducts research and publishes reports about issues concerning the nation's Latino communities, including studies about computer ownership and Internet access by Hispanics.

State Utility Commissioners and Public Advocates

Many of the policy issues described in this report will play out at the state level. Advocates who wish to get involved should contact the following organizations to identify state regulators and consumer advocates.

National Association of Regulatory Utility Commissioners (NARUC)
1100 Pennsylvania Avenue, NW
Suite 603
PO Box 684
Washington, DC 20044-0684
Tel: 202.898.2200
Fax: 202.898.2213
www.naruc.org

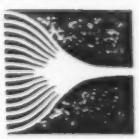
In addition to educating its members (state utility commissioners) on utility regulation issues, NARUC also represents states in various utility proceedings at the federal level. The NARUC Web site links advocates and citizens to state utility commissioners who may be contacted for information about their state's regulatory activities or for filing complaints.

National Association of State Utility Consumer Advocates (NASUCA)
1133 15th Street, NW
Suite 550
Washington, DC 20005
Tel: 202.727.3908
Fax: 202.727.3911
www.nasuca.org

NASUCA is an association of 42 consumer advocate offices in 39 states and the District of Columbia. Members are designated by laws of their respective states to represent the interests of utility consumers before state and federal regulators and in the courts.

NATIONAL URBAN LEAGUE

120 Wall Street
New York, NY 10005
Tel: 212.558.5300
Fax: 212.344.5332
www.nul.org



BENTON FOUNDATION

1634 Eye Street NW 11th Floor
Washington, DC 20006
Tel: 202.638.5770
Fax: 202.638.5771
www.benton.org